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On the Subsidization of Wheat in the EEC

by

Martinus Aloysius Maria Ingen-Housz

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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IN

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Abstract

The primary objective of this study is to quantify the effect of subsidization on the production of wheat in the EEC. The secondary objective is to relate this effect to the movement of Canadian wheat into foreign markets.

An analysis of the Common Agricultural Policy (CAP) of the EEC shows that the CAP can be seen as a system designed to garantee a certain level of producer prices: the price effects of imports are neutralized by a variable levy; the price effects of surplusses are countered by export subsidies; and the effects of macro-economic changes are delayed by a system of Monetary Compensatory Amounts. The consumer in the EEC member states pays for this policy: through the one percent of the value added tax, that goes to the financing of the EEC, and through the prices paid for agricultural products. The difference between the producer price and the lowest c.i.f. offer price in Rotterdam, measured in national currencies constitutes a subsidy. This subsidy can be expressed as a percentage of the producer price, and can be converted to a quantity produced due to subsidization with the help of the relevant supply-elasticities.

This conversion has been done for the years 1974/75-1980/81, and for 1985, 1987, and 1990. Both a high and a low elasticity have been used. A reasonable price path has been chosen for the producer price development in the future , and the 'world price' has been projected in constant real terms and in terms of an annual decline of two percent. This leads to four separate results.

To investigate where this extra EEC wheat will find its market, the export pattern of France, the major EEC exporter, is analysed. All this is set against the background of the general demand situation for wheat in the decade of the eighties. For this purpose, three methodologically different demand projections have been examined.

The estimated production of wheat due to subsidization in the EEC ranges from 0 in 1974/75; to 2.0-4.9 million tons in 1980/81; and to 5.8-15.1 million tons in 1990, depending on the elasticities and price

assumptions used. The exportable surplus found its market in ex-colonies of France, and, due to the geographical location of Europe, in Eastern Europe and the USSR. Continued abundance of supplies throughout the decade will increase competition for markets, and the necessary adjustments will fall upon the traditional exporters more than on the EEC, due to its institutional arrangements, and due to international agreements under the GATT.

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Wendy Williamson entered the major body of the text into the computer and she included the necessary textform commands. Towards the end, the computer almost swallowed me, but Jim Copeland pushed the right buttons and tamed this wild piece of technology.

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1. Introduction

Zen painting knows the one-stroke style, in which the subject is rendered with one swift motion of the brush. Only one detail gets extra attention and shows minute brushwork. This study resembles this outwardly: a very detailed look at the Common Agricultural Policy (CAP) of the European Economic Community (EEC) is set within a swiftly sketched picture of its global context. Instead of showing enlightment, however, what is offered here will at best show some understanding, and perhaps deepen the understanding of the reader, but only after doggedly pursued reading.

The objective of this study is to quantify the effect of subsidization on the production of wheat in the EEC. That is the fine brushwork. The secondary objective is to relate the effect of the subsidization in the EEC to the movement of Canadian wheat into foreign markets. That is the one-stroke part.

The analysis presented here does not rely on econometric techniques; it has not been left to the computer to create order in a large amount of data, nor has it been left to regression analysis to determine the relevant variables. In abstracto, it can be argued that the outlying observations are the interesting ones: the first signs of things that we do not know about yet. It is always the observation that does not fit, that falls victim to the ways of regression analysis.

What is offered here, instead, is a detailed look at the CAP, in order that an understanding of the EEC system will yield the variables needed to quantify the effects of the subsidization. Chapter 2 describes the CAP as it applies to wheat, and highlights the general features of the CAP that are necessary to understand its working.

Armed with this understanding, it is possible to determine what subsidization means in the case of the EEC: the transfer of money from consumers to producers through the maintainance of high producer prices. The insights gained in chapter 2 make it also possible to determine which part of the total producer price can be conceptualized as a subsidy. The first part of chapter 3 details the subsidy concept and the methodology used. The rest

contains the presentation of the data which have been used to put a monetary value on the subsidy, as conceptualized here, and the data that have been used to convert this monetary figure to amounts of production due to subsidization: supply elasticities. The calculation used is also presented, as well as the results. The production due to subsidization is calculated for the period 1974/75 - 1980/81, and for 1985, 1987, and 1990. To relate the results to Canada, a price tag is attached to the amount of Canadian wheat that is displaced by the subsidized production in the EEC.

Chapter 4 is the broad picture. The external trade pattern of the EEC is examined in some detail and put in the context of three global demand projections. The demand projections can only give an indication of the larger context in which the EEC production will find itself, but they do provide a vehicle for the examination of the relationship between Canadian and EEC wheat exports. Thus, they make it possible to reach the secondary objective of this study.

In chapter 5, the conclusion, the foregoing chapters are briefly summarised, and their relationship is once again established. Three policy recommendations are given.

That is what is done. What is not done, is the incorporation of the differences in quality between wheat varieties into the analysis. Data to distinguish between food and feed wheat, and between soft and hard wheat were not available. As a consequence, wheat is treated as a homogeneous commodity. The awareness that this is a restrictive assumption shows here and there, but is of little influence.

Another thing that has not been done, is the inclusion of Greece, Spain, and Portugal in the analysis. Greece has been an EEC member since January 1982; Spain and Portugal are currently negotiating their entry. That the analysis dealing with the past, does not include these countries, needs no defence. Their absence in the analysis dealing with the future must be explained. Uncertainty about the timing and conditions of the entry of Portugal and Spain keeps them out. The necessary adjustment phase will make the impact of their entry only

felt towards the end of the decade. In the case of Greece, the adjustment phase is the reason for exclusion. So many assumptions were already needed to be able to project the common prices till 1990, that the inclusion of a small country, which does not even apply these prices, would cause more trouble than its small market is worth.

All volume figures are in metric tons. Other units are specified where necessarry.

2. The Common Agricultural Policy

2.1 Legislative Foundation and Institutions

On March 25, 1957, the treaty of Rome, establishing the European Economic Community, was signed by France, Germany, Italy, Holland, Belgium and Luxembourg. It became effective on January 1, 1958. In 1973, the EEC was enlarged with the United Kingdom, Ireland and Denmark, and in 1982 it was joined by Greece.

The objectives of the agricultural policy of the community are outlined in Article 39.1:

a. to increase agricultural productivity by promoting technical progress and by ensuring the national development of agricultural production and the optimum utilization of the factors of production, in particular labour;
b. thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
c. to stabilize markets;
d. to assure availability of supplies;
e. to ensure that supplies reach consumers at reasonable prices.

The principles of market unity, community preference, and financial solidarity were codified later in Regulations 19/62/EC and 25/62/EC. Market unity is the existence of one market, one price, and one marketing procedure throughout the community; community preference is the protection of intra-EEC trade; and financial solidarity is the common financing of all actions in pursuance of CAP goals.

The first pieces of CAP legislation for grains date from 1962 (19/62/EC) and set the process of market harmonization working. The harmonization ended in 1967 with the establishment of common prices throughout the EEC (120/67/EC). This basic regulation was replaced in 1975 by Regulation 2727/75/EC, without changing the foundation of the grain policy.

Apart from the three principles described above, one can distinguish the following cornerstones of the CAP for grain:

a. abolition of all national government control measures;

b. reliance on the price mechanism to influence the market;

c. price differentiation according to location;

d. inclusion of grain substitutes.

In order to establish an EEC vocabulary, it is useful to give a short description of the relevant EEC institutions.

The Council of Ministers is the primary legislative body. Each member state is represented by that government minister under whose jurisdiction the matter at hand falls. The Council presidency is for six months and rotates among all members. Voting used to be ruled by the so-called Luxembourg compromise, which requires unanimity if a member state declares that its vital interest is at stake. In the 1982 price negotiations, this agreement was broken when the expressed wishes of the U.K. were ignored. The results of this breach are not yet clear, but a return to the majority decision rule, which is enshrined in the Treaty, is likely.

The Commission is the day-to-day administrative body. Its twenty Directorates-General carry out the Council's decisions in as many topic areas. The Commissioners are appointed by the individual member states. The Commission is responsible for most of the preparation of EC legislation and has legislative powers in some matters left to it by the Council. The Management Committee for Cereals is the body that administrates the cereal regime on a day-to-day basis. It is part of the bureaucracy of the Commission.

The European Parliament has mostly a watchdog and advisory function. Its members are elected directly. Except for some increased powers in the budgetary process, the Parliament is impotent.

The Fonds Europeen d'Orientation et de Garantie Agricole (F.E.O.G.A.) is the mechanism through which the CAP is financed. It consists of a guidance section through which structural measures are financed, and a guarantee section which finances the price support system. It is funded by all levy income and by 1 percent of the value added tax (VAT) receipts of all member states.

Notwithstanding the extensiveness of EC legislation and its deep penetration in the agricultural sections of the member states, the EEC remains basically an intra- and not a supra-national organization. The main decision making power is in the hands of the Council and thus in the hands of the member state governments.

2.2 The Pricing System

2.2.1 The benchmark prices

The intervention price is set at Ormes. Ormes is the major market centre in the lower Paris basin, the area with traditionally the largest physical surplus of wheat in the EEC. The intervention price is the guaranteed minimum price. The interventionary agencies are obliged to accept all the locally produced cereals offered to them if the market price sinks below this price. Only quality can be a restricting factor. One intervention price is established for feedwheat, barley, and corn. For wheat of bread-making quality, a reference price is set at about 15 percent above the intervention price. The intervention price for rye is to coincide with the one for feedwheat, barley and corn in the 1982/83 marketing year. This pricing structure, referred to as the silo model was introduced in 1976/77 to streamline the regulatory system and to minimize the market interference. Under this pricing regime, the market price of the different cereals will be determined by their relative feed value. There is a separate intervention price for durum wheat.

The target price is derived by adding (a) the transport costs between Ormes and Duisburg, in the area with the greatest cereal deficit in the EEC; and (b) a market element, to the intervention or reference price. The market element for wheat of bread-making quality, rye, and durum reflects the difference between the market and the intervention price in Ormes in normal circumstances; for barley, corn, and feedwheat, it also represents the differences in relative feed value.

The threshold price is determined by deducting the transportation cost between Rotterdam and Duisburg (barge traffic), a handling charge, and a commercial margin from the target price. The threshold price is the minimum import price and ensures that the target price cannot be undercut by third country imports.

These benchmark prices are determined annually. They are, however, not stable over the year (August – July for cereals). To prevent the whole crop from being offered for intervention right after harvest, the prices are subject to monthly increments to reflect on-farm storage costs. The threshold price is increased every month,and the intervention price in each of the first ten months. The intervention price in the last two months of the marketing year are the same as in the first month. The reference price is only valid in the first three months. Table 2.1 gives the relevant prices for soft wheat for the 1981/82 and the 1982/83 marketing years

2.2.1.1 The Objective Method

The level of the benchmark prices is determined by the Council of Ministers, based on proposals put forth by the Commission. One of the ways in which the Commission comes up with its proposals is the Objective Method, which is aimed at yielding price increases that will ensure the survival of efficient farms.

The Objective Method is a cost plus pricing mechanism. In each member state 'Reference Farms' are selected and data concerning their labour and other costs are gathered. To qualify as a reference farm, it must be able to yield an income per labour unit between 80 and 120 percent of the average comparable non-farm income in that region. The costs are adjusted using cost trends and movement in comparable incomes over the last three years. To account for productivity increases, a flat 1.5 percent is deducted. This is done for each member country and the results are adjusted for the movements of the national currencies against the ECU (see chapter 2.2.2). The 'common' price then emerges after the national

Table 2.1: The 1982/83 Soft Wheat Prices.

	1982/83		1981/82		percentage increase	
	ECU/ton	DM/ton	ECU/ton	DM/ton	in ECU	in DM
Breadmaking wheat reference price average quality	209.10	538.48	192.72	511.98	8.50	5.2
Feed wheat intervention price	179.27	461.66	165.23	438.95	8.50	5.2
target price	250.61	654.38	230.55	612.48	8.70	5.4

Source: Toepfer, June, 1982

prices are weighted according to the national share of EEC agricultural output (de Veer, 1979; Swinbank, 1979).

Discussions about the 'Objective Method' date from the very beginning of the CAP, but it was not until the 1972/73 proposals that objective criteria were used. The following period saw increasing refinement in the statistical formulations used.

It has been recognized by the Commission that this method cannot be the only pillar upon which to build the pricing proposal. Cost plus pricing does not necessarily lead to market equilibrium. Thus, increasingly the other criteria have been used in the formulation of the proposal. The final pricing decision is again another step.

2.2.1.2 Political Influence

Historically, the political wrangling in the Council has made the outcome of the price negotiations higher than the Commission's proposal. In 1975 the outcome of the Objective Method was a price increase of 4.2 percent, the Commission's proposal was 9 percent and the Council's decision was 9.6 percent. For 1978, these figures were 4.2 percent, 2 percent and 2.4 percent respectively (Swinbank, 1979).

The EEC is comprised of countries with very different agricultural sectors; with differently structured economies overall. This results in different views on the height of the common prices.

Germany has a long history of strong protection ,which has fostered inefficiencies in the farming sector, especially because it slowed down the development towards larger farms and the adaption of new technologies. The economic strength of the Bundesrepublik makes high farm prices necessary to keep farm income in line with other incomes. The affluence of the consumers explains the indifference towards farm policy. The agriculture minister has traditionally been a senior cabinet member, and has had little opposition to a high farm price policy in the past (Tangermann, 1979).

The United Kingdom has an efficient agricultural sector which can achieve an acceptable level of farm income at a relatively low price level. The relatively low non-farm incomes and its traditional role of importer all support a low farm price policy (Ritson and Tangermann, 1979; Marsh, 1979).

France has a mixed farm structure with a highly efficient grain, but a inefficient livestock sector. The weakness of the franc makes the government lean towards low food prices as an anti-inflationary method. This results in a very mixed pricing policy (Ritson and Tangermann, 1979; Clerc, 1979).

The pricing decision in Italy is also subject to very different influences. Italy is an exporter of Mediterranean products and profits by high prices for these products. It imports temporate zone products and stands to gain by low common prices for these products.To keep agricultural income in line with other income, it is necessary to keep prices high, notwithstanding the low per caput income compared to most other EEC members (Ferro, 1979).

In general, it can be seen that the CAP, with its common financing and its community preference, inclines exporters to higher prices and

importers to lower prices (Ritson and Tangermann, 1979). All these diverse pressures find their way to the negotiations in the Council. The necessity of each agriculture minister to come out of the price negotiations looking good, results in extensive horse-trading of price increases, resulting in higher prices than proposed by the Commission. That there is a possibility to reach common prices is mainly due to the system of green rates and monetary compensatory amounts (see chapter 2.3) which makes different domestic price levels compatible with common prices.

2.2.2 European Currency Unit and the European Monetary System

The common prices are denominated in European Currency Units (ECU), an accounting device used since the introduction of the European Monetary System (EMS) in 1979. The ECU is based on the member states' currencies of which it contains certain quantities in accordance with the individual countries' share in the Community's gross domestic product and intra-Community trade. Thus, each country's currency is represented in the ECU on the basis of its trade weighted economic strength. Each member's currency can be expressed in ECU's using bilateral exchange rates and it is part of the EMS to keep fluctuations in the value of national currencies within 1.125 percent around this rate. Larger fluctuations must trigger central bank buying or selling and general economic measures to defend the exchange rate fixity. Changes in the central rate can only take place in consultation with the other members. Although the pound sterling is used in the calculation of the ECU, the British government has decided not to join the EMS, and does not hold itself to the rules laid out above. Italy keeps its currency in a 6 percent band around the central rate. Greece will not join the EMS before 1986, and the drachma is not represented in the ECU.

The calculation of the $/ECU exchange rate, important for the calculation of the levy (see chapter 2.4.2), is derived by comparing the official daily dollar (U.S.) spot rate of the EMS countries and the U.K. with their central ECU rate. By dividing for example the $/D.M. rate by the ECU/D.M. rate, a $/ECU rate is

arrived at. The arithmetic mean of all these calculations is the $/ECU rate, also known as the currency factor (Toepfer, 1981: 44).

The common prices are converted into national currencies via the appropriate exchange rates: the green rates (see chapter 2.3) Before the introduction of the EMS, the common prices were set in units of account. The introduction of the ECU was done in such a way that price levels did not change. The value of the unit of account, however, was determined differently than that of the ECU, which changes the effects of an exchange rate change of one of the members (see chapter 2.3.1).

For an indication of national currency/ECU exchange rates, see table 2.2. The national currency/ECU rates are subject to change, reflecting the changing macro-economic situation in the EEC member states. The EMS does not ensure exchange rate fixity, but only fixed and adjustable rates.

2.3 Green Rates and MCA's

2.3.1 Emergence and organization

The main source of light on this subject has been Irving and Fearn (1975). In 1969, the French franc devalued, which would result in higher food prices if the common prices would be converted into francs at the new rate. Unwilling to accept this, the French government requested and was granted by the Council permission to use the pre-devaluation exchange rates for agricultural purposes. A devaluation of the German mark in 1969 and the general breakdown of the Bretton Woods system of fixed but adjustable exchange rates after 1971, proliferated the use of special exchange rates for agricultural purposes: green rates. To prevent trade flows due to this divergence between green and market rates, Monetary Compensatory Amounts (MCA) were created. MCA's equalize prices at the border; they are export levies and import subsidies for countries with a green rate above market rates (depreciating currency) and export subsidies and import levies for countries with a green rate below the market rate (appreciating currency).

The introduction of the EMS greatly simplified the MCA system. There are basically fixed market rates of exchange between the countries of the EMS. This, coupled with the stability in green rates, which can only be changed by the Council on behalf of the member states, results in fixed MCA's. The actual amount is calculated as follows: The difference between the market rate and the green rate is expressed as a percentage of the market rate: the MCA percentage. The multiplication of the MCA percentage with the intervention price in local currency yields the actual MCA.

Two refinements are in place to fine-tune the system:

a. In order to compensate for trade that takes place at prices below the intervention price, such as trade with non-EEC members and trade with new members in their adjustment phase, the MCA is adjusted with the Monetary Coefficient. The coefficient is equal to 1.00 - MCA%/100 for countries with appreciating currencies and to 1.00 + MCA%/100 for countries with a depreciating currency.

b. A compulsory reduction of MCA's has been introduced. Weak currency countries reduce their MCA percent by 1.5 percent and strong currency countries by 1 percent. The 1.5 percent reduction has been in force since 1976 and the 1 percent reduction was introduced in 1979.

To clarify the calculation of the MCA percentage, the figures presented in table 2.2 can be used. The market rate of exchange of the Belgium Luxembourg Economic Union is 44.970 (A) and the green rate is 42.977 (B). Expressing the difference between the market and the green rate as a percentage of the market rate by calculating (A) devided by (B), times 100, minus 100. The result is 4.6 percent. This is to be reduced by 1.5 percent to arrive at the MCA percentage as it is used in the calculation of the actual MCA: 3.1 percent.

For those countries that do not adhere to the strict rules of the EMS, it is necessary to calculate variable MCA's. This is done by taking the unweighted average of the percentage difference between the central ECU rates of the EMS countries expressed in the floating currency via its green rate and

the central ECU rates of the EMS countries expressed in the floating currency via the five-day average market rate. The MCA percentage, thus derived, is used to calculate the actual MCA as outlined above. The same refinements apply.

In the days before the EMS, an exchange rate fluctuation resulted in a MCA in the depreciating or appreaciating country, leaving the MCA's in other countries unchanged. The definition of the ECU ensures that the national currency/ECU rate will change for all member countries in the case of an exchange rate change of one of the members, and thus changes all MCA's (ISEI, 1979b).

The introduction of the EMS changed the environment of the MCA's. In 1979, the Commission proposed a liquidation of existing MCA's in four years and a phasing out of new MCA's in two years, the time in which, on the average, the agricultural economy adjusts to an exchange rate change (ISEI, 1979a: 12). No formal agreement has been possible on this subject, but there does exist a working agreement between the EEC members to liquidate new MCA's within two years, provided that this does not lead to lower producer prices in the member states.

The MCA's in effect on July 19, 1982 are shown in Table 2.2, noting that a positive MCA means the MCA of a country with an appreciating currency and a negative MCA that of a country with a depreciating currency.

2.3.2 Effects of MCA

2.3.2.1 Internal trade

The MCA system distorts production levels in each member state. Production of wheat has been expanded in countries with a positive MCA, because the MCA system kept the domestic price from falling and increased the protection above the level afforded by the variable levy system.

MCA's also influence the demand side. They forestall a dampening of demand in the depreciating currency countries and keep demand from rising

Table 2.2: Exchange Rates and MCA Percentages, as applicable in July, 1982.

Country	ECU Central Rate	Green Rate	MCA Percentage
Germany	2.334	2.657	+11.2
France	6.614	6.196	- 5.3
Italy	1350.270	1227.000	(variable)-6.6
Holland	2.580	2.814	+ 7.3
BLEU *	44.970	42.977	- 3.1
U.K.	0.557	0.619	(variable)+9.6
Ireland	0.691	0.685	0.0
Denmark	8.234	8.184	0.0
Greece	66.507	64.860	0.0

* Belgium/Luxembourg Economic Union
Source: Toepfer, July, 1982

in appreciating countries.

Rodemer (1980), using trend analysis, comes to the conclusion that the MCA system has turned back the structural changes which occurred in the harmonization phase (1962-1967). During this phase, those countries with relatively low pre-CAP prices (e.g., France and Holland) increased their share of EEC output of agricultural products rapidly. In countries with relatively high pre-CAP prices (e.g., Germany and Italy), the share of EEC output fell or developed slower. The MCA system effectively reverted those structural changes. Countries with a positive MCA increased their percentage of EEC output, which for Germany was a trend reversal and for Holland a trend acceleration. Countries with negative MCA's saw their percentage of EEC output fall. French output increase was below the EEC average and even lower than in the pre-CAP period; Italy's percentage of EEC output has been diminishing since 1969.

Lozeby and Venzi (1978), though very careful in their choice of words, indicate that the MCA system has favoured intra-EEC exports of strong currency countries; that, in general, it increased their competitiveness.

ISEI (1979a) lists several other effects, including:

a. violation of the principles of equal prices;

b. no more free movement of goods between member states;

c. redistribution of income between member states.

2.3.2.2 External Trade

Third country trade is subject to levies and subsidies to insulate the EEC market from the rest of the world (see chapter 2.4.2). Positive MCA's are added to these levies and refunds and negative MCA's deducted from them. However, it should be noted that MCA's are internal EEC money flows; the importing or exporting country nets the MCA against the appropriate import levy or export subsidy. The levy is recieved and the subsidy is paid out before the MCA is applied.

For an exporting third country, this means that the MCA's do not have an influence on the levy payable. MCA's do, however, influence the net landed price since the member state nets the MCA against the levy. The net landed price decreases with the amount of MCA in weak currency countries and increases with it in strong currency countries. Theoretically, a negative MCA increases the propensity to import and a positive MCA decreases it. Thus, farmers in countries with an appreciating currency enjoy a higher level of protection, vis-a-vis, third countries than farmers in countries with depreciating currencies.

For EEC countries exporting outside the community, the MCA do what they set out to do: they equalize prices at the border. Thus, the MCA's ensure that extra-EEC trade is not discriminated against on the basis of origin.

2.4 Trade Regulatons

2.4.1 Internal Trade Regulations

There are three different kinds of intervention, A, B and C, of which intervention A is by far the most important (Toepfer, 1981). The intervention agencies, national bodies entrusted with the actual administration of the CAP, have a legal obligation to accept grain that is offered to them at the intervention price, provided that it meets certain quality and quantity standards

(see Appendix A for quality standards). The quantity standards vary in relation to different market situations and range from 10 tons in Greece to 500 tons in France and Denmark. Also, the quality standards can be altered by the Commission to allow for special conditions such as extensive frost damage. This is Intervention A and is available throughout the crop year for feed wheat and in the first three months of the crop year for wheat of bread-making quality, although limited amounts have been accepted after this period in cases where the market price fell well below the reference price.

Intervention B is the offering of storage contracts to merchants to withhold grain and thus forestall a glut in the market and Intervention C is special intervention buying at the discretion of the Management Committee for Cereals. These two intervention mechanisms allow for an active market regulation and are supported by an active export subsidy program.

Intervention stocks can be sold in the domestic markets, but only if this does not depress domestic prices. It cannot be sold at a price less than the intervention price plus a certain margin. This margin was 1.8 ECU per ton in 1981/82. Freight allowances may be paid to move grain into areas where demand exists.

To guarantee a continuous supply to processors, an end-of-season stock subsidy is given. Without it, all not-yet-marketed grain would be offered to the intervention agencies in May, the last month in which the intervention price plus increments is valid. The height of the subsidy is dependent on the difference between the intervention price plus increments in the old marketing year and the new intervention price.

2.4.2 External Trade Regulations

The difference between the lowest c.i.f. offer price in Rotterdam and the EEC threshold price, is appropriated by the EEC via an import tax. Since the c.i.f. price is not fixed, this tax takes on the form of a variable levy. The lowest c.i.f. offer price is determined daily after standardizing all qualities of grain offered on the basis of the European Standard by means of Coefficients

of Equivalence (see Appendix B). Thus, not the absolute lowest offer price, but lowest quality adjusted price is used in the calculation of the levy.

The levy is applicable throughout the community with the exception of Italy, where it is lower to reflect higher transportation costs and poor handling facilities. The levy is also lower for certain countries with a special connection to the EEC, such as the Lome conference countries and several countries in the Mediterranean basin.

Importation is regulated by licences, issued by the national market regulating authorities. Exports are subject to licenses too. This gives the national governments and the Commission, which has powers to temporarily suspend licenses, great discretionary power in the direction of trade flows.

With intervention prices normally higher than prices prevailing on the world market, export subsidies are necessary to market European grain outside the EEC. The Management Committee for Cereals fixes these subsidies on a weekly basis, taking into account:

- grain prices in various EEC markets;
- the most advantageous price quotation in the importing countries;
- the stability of the EEC market.

The Management Committee for Cereals can change the subsidy midweek if market conditions demand this. Subsidies also vary with the distance to the export market.

Thus, the subsidy does not represent the difference between prices prevailing on the world market, measured by whatever proxy, and EEC prices in the same cut-and-dry way as with the levies. The export subsidy is essentially a management tool for the internal EEC market.

Technically, the exports are divided into two categories: the weekly tender programme and the standing subsidy programme. Under the first, the exporter submits the amount he wishes to export and the subsidy required to the appropriate market regulatory authority. All tenders requiring a subsidy less than the subsidy fixed by the Management Committee are accepted. Most exports go this route. Under the latter, grain moves to a few traditional and

predictable customers such as Spain, Austria and Switzerland. Subsidies under this program are set periodically by the Commission.

Apart from these, there is the food aid program. Grain offered through this program is free of charge. Most of it comes out of intervention stocks, but in special cases it can be bought in the EEC market or even outside of it. (see chapter 4.1.3)

The CAP was explictly discussed during the Tokyo rounds of the GATT. In the political negotiations, the external trade regulations of the CAP have been accepted by the other signatories, including the U.S. This is the reason why the GATT cannot be invoked by the U.S. in their disagreement with the EEC over the export restitutions, while the EEC can and did bring the U.S. export methods before the GATT.

3. CAP Subsidy Effect Quantified

In this chapter a quantification of the effects of the EEC pricing regime will be given. The amounts with which the EEC farmers are subsidized and the amounts of wheat produced due to this subsidization will be calculated for the period 1974/75 to 1980/81, and for 1985, 1987, and 1990. A myriad of assumptions is needed to make the latter possible. The methodology is modelled after FAO (1973).

3.1 Methodology

3.1.1 Prices

The EEC price for wheat is normally above the price at which wheat is offered on the spot market in Rotterdam. Economic theory suggests that extra production comes forth at higher prices, the relationship between the two being measured by the supply elasticity.

In order to estimate the subsidy amount it is not necessary to go to a detailed examination of the EEC budget. True, EEC money is spent to keep producer prices where they are through intervention buying and export subsidies. But, ultimately, it is not EEC money that is used for the subsidies. It is the consumer in the member countries that bears the onus of the subsidization, through the tax system which gives 1 percent of the VAT to the community, and through the price of food. The levy income of the EEC is also paid by the consumer. The importer, by paying the levy, gains the right to sell his product in the EEC markets at the prices prevailing there and he is thus able to roll the levy cost onto the consumer.

Subsidy is used here in a broad sense. It is not true that the producer receives an actual cash payment. He receives the EEC market price, but part of this price can be conceptualized as a subsidy. It is the amount that would have to be paid out to the producer if the CAP were to disappear overnight and producer income were to remain at the same level. Thus, the EEC producer price can be divided into a market component and a subsidy equivalent.

The description of the CAP in Chapter 2 makes it possible to find the relevant price levels. The top level is found by seeing the CAP as an elaborate system to ensure the producer a certain price. The price effect of imports is neutralized by the variable levy, the price effect of surpluses is countered by export subsidies; and the effects of macro-economic changes are delayed by the MCA system. It is thus the producer price in local currency that is the top price level determining the subsidy equivalent.

The bottom level, the price with which the EEC price is to be compared, is less straightforward. It is not realistic to refer to something as a free market price. This assumes that it is possible to consider the wheat market without the CAP; that, if the CAP were abolished, all member states would abstain from any kind of market interference on a national level; and that only the CAP stands between reality and a freely competitive market. Since the subsidy equivalent is conceptualized as the subsidy to be paid to keep farm income constant in the absence of the CAP, the price to compare the EEC price to is the price at which wheat would be available the morning after the CAP disappeared: the c.i.f. offer price in Rotterdam.

It must be clear that this is an heuristic exercise. An overnight abolition of the CAP would plunge the wheat market into chaos; futures markets would be closed; people would hang on to or unload all their stocks depending on how they reacted in panic; and one can only guess where the price would stabilize again. But, the c.i.f. price in Rotterdam can serve as a tool to discover which part of the EEC producer price is to be viewed as a subsidy equivalent. All CAP regulations are only necessary because of the difference between the price inside and outside the community. In order to estimate the effects of these regulations, the price outside the EEC is relevant and the c.i.f. offer price in Rotterdam is the price at which, at any given day, wheat is available at the borders of the EEC.

The subsidy equivalent per ton times the current level of production is the cost to the society of the marginal production. The subsidy equivalent can be expressed as a percentage of the producer price: the PSE %. This

percentage gives the proportional decrease in the producer price if the non-subsidized price level were to prevail. If the non-subsidized price level were to prevail, the marginal production would not come forth and the cost would not be incurred by society.

Supply elasticities have been used to calculate this marginal production. A supply elasticity can be seen as the percentage change in output following a 1 percent change in price (ceteris paribus). If the PSE % gives the percentage by which the producer price does not decrease due to subsidization, then the marginal production due to the subsidization is given by the multiplication of the subsidy equivalent percentage and the supply elasticity.

The EEC farmer reacts in his production decision to the level of the domestic prices. The producer price can be divided into a market component and a subsidy equivalent, with a corresponding seperation of his total production into a market and a marginal portion. If the subsidy equivalent is known, the marginal production can be calculated using suitable supply elasticities. This marginal production is the production due to subsidization.

The supply elasticity is a marginal concept, relating the change in supply to the change in price. The marginal production of wheat in the EEC is determined by the difference between the producer price and the lowest c.i.f. offer price. If these two prices differ substantially, then the production due to subsidization becomes a large part of the total production, and it becomes questionable whether a marginal concept, such as the supply elasticity can be used. This question will be discussed in more detail in chapter 3.2.4.

3.1.2 Structure

Production is not only determined by price. The structure of the agricultural sector is also of importance. To name but a few aspects: the size of farms; technology used; number of people employed; and availability of credit.

Direct EEC expenditures under the Guidance Section of the FEOGA have been limited. EEC policies directed at the structure of the agricultural sector

remain undeveloped, although there have been several efforts to stimulate structural policies, most notably the Mansholt plan of 1968. The expenditures under the Guidance Section, although growing slightly, are still less than 5 percent of the money spent under the Section Garantee.

However, not all money spent on agriculture in Europe is EEC money. Marsh (1979: 373) mentions that total national expenditures on agriculture are twice those under FEOGA. This figure is born out by Meester (1980: 189-192) and by an examination of the recent West German agricultural budget (Agra Europe, July 16, 1982). Most of expenditure on agriculture, spent nationally, is spent on structural policies including social security systems for the agricultural sector, research, land amalgamation, and the running of the agricultural bureaucracy proper. Most of the FEOGA funds, and the transfers of money to the FEOGA are part of the national expenditure on agriculture, are spent on price support. Thus, it can be said that roughly the same amounts are spent on prices as on structure.

Money spent on structural measures only enters into this study in an indirect way. It is ignored in the calculation of the production due to subsidization. On a year-to-year basis, the structure can be taken as given. In this study, each year is looked at seperately and for each year the production due to subsidization is estimated without reference to the previous years.

The structural improvements show up, however, as part of the trend of expanding production. Production of wheat in most EEC countries grows because of a shift of capital into wheat. It also increases because of the gains in efficiency in the agricultural sector. With the same amount of resources, more and more output is generated: the production function is shifting upwards.

Yields of wheat improved by 70.6 percent between 1961/65 and 1978/80 in France, with the EEC (9) average increase at 57.1 percent; the labour force in agriculture is now half of what it was in 1960; and real investment increased twofold in Germany and France, and fourfold in Holland and Belgium in that time period (Agricultural Outlook: various issues).

3.2 Data

3.2.1 Prices

The prices for the period 1974/75-1980/81 come from the Commission (1982). The producer prices used are the market prices in local currency, if available, of feed wheat. Otherwise, the intervention price was used, increased by the ten increments and averaged out over the marketing year. The lowest quality adjusted c.i.f. price in Rotterdam was used to reflect the generally low quality of European wheat. This is the price used in the calculation of the variable levy and is quoted in ECU's. The price is quoted in units of account until 1977/78 and converted into ECU. With most wheat in Rotterdam denominated in U.S. dollars, this ECU quotation is calculated via the $/ECU exchange rate, which is constructed with the $/local currency market rate. The ECU quotation is therefore converted into local currencies via the market exchange rate. The average market exchange rate was converted from value per calendar year to value per crop year.

The estimated prices for the year 1985, 1987 and 1990 come from Josling and Pearson (1982). They are derived as follows:

The decision on common prices is assumed to be ruled by:

1. no decrease in nominal prices in each member state;
2. increase of national price level does not exceed previous year's inflation.

Within these broad guidelines, three pricing strategies are distinguished:

a. MaxMax--inflation is compensated in all countries;
b. MinMax--inflation is only compensated in the country with the lowest inflation;
c. MaxMin--inflation is not compensated; only the absence of a nominal price decrease is assured.

To be able to actually calculate the pricing paths, more assumptions have to be made:

3. The development of inflation rates in the member states and the U.S.

Independent econometric estimates supplied by the International Economics Division, ERS-USDA are used.

4. Exchange rates reflect inflation rate differentials: the Purchasing Power Parity theory;
5. A revision of the ECU definition restores the situation of 1979;
6. The working agreement to phase out new MCA's in two years is honoured. The green rates will follow the market rate with a two year lag, the interim period being covered by MCA's.

Assumptions #1 and #2 give the development of the market rates of exchange, #3 refines them, and #4 determines the green rates. The pricing strategies are determined.

The "world price" is assumed to be constant in real terms in 1979 dollars. Since wheat is denominated in U.S. dollars in international trade, the nominal price of wheat will follow the U.S. inflation rate. EEC currency prices can be calculated. The world price is also presented under the assumption of a real annual price change of 2 percent. The choice of 1979 as a base year seems warranted. The subsidy amount that year was close to the average for all member countries. And also the production was close to the trend (Uhlmann, 1980).

For the calculations in this study, the EEC prices according to the MinMax strategy will be used. This price path is the closest to the price development in the 1970s. The world price will be used under the assumptions of constant and 2 percent annual decreasing prices. The assumption of a 2 percent annual increase in world price has to be rejected on the ground of inconsistency with the results of the demand projections used in this study (see chapter 4.3). 'world price' is not the lowest c.i.f. offer price in Rotterdam. If, however, the 1979 lowest c.i.f. offer price is inflated at the U.S. rate, the results are very close to the ones presented here. It should also be noted that the Josling and Pearson study calculates target prices. To convert these into intervention prices would give a semblance of accuracy, which does not exist in the forecasts. The target prices have been maintained.

The Josling and Pearson study indicates that, under the MinMax and the MaxMax pricing strategies, the EEC budget will be exhausted before 1990, creating the need for either an increase in EEC income or the institution of quantity control measures. Here it will be assumed that, if necessary, the EEC member states will find a way of funding all FEOGA expenditures. It has been suggested that the entry of Spain and Portugal will be an auspicious moment to increase the 1 percent VAT contribution (Blom and Meester, 1982).

Feed wheat prices have been used throughout, although there is a reference price for wheat of breadmaking quality. However, no statistics are available on the amounts of wheat bought at this price. Thus, the subsidy amount is somewhat underestimated. This underestimation is reduced by the fact that the lowest c.i.f. offer price is used throughout, while the price of wheat of breadmaking quality should be compared with the price of the North American hard wheat varieties.

3.2.2 Supply

Production data for the period 1974/75-1980/81 come from the Commission (1982). The data are for soft wheat. Data for durum wheat are available, but have been left out of the analysis because of the different end use. Durum and soft wheat taken together exhaust the acreage of total wheat. No production data of hard wheat varieties are available.

Data on the expected production in 1985, 1987 and 1990 came from Uhlman (1980). Using trend analysis, the area and yield in the member states are estimated and a production estimate is calculated. Where data for the individual countries were not available, EEC averages were used. The analysis does not distinguish between soft wheat and durum wheat. For France and Italy, the only two member countries which grow durum, this has been adjusted by assuming the durum acreage constant at average level of the period 1974/75-1979/80: 150,000 hectares in France and 1.5 million hectares in Italy. The durum acreage in France varies around the average value. In Italy it is relatively stable. These figures are generally in line with Boddez, et al (1980).

3.2.3 Demand

Utilization data for the period 1974/75-1980/81 came from the Commission (1981). They include seed, feed, food, and industrial use of soft wheat.

Expected utilization of wheat in 1985, 1987 and 1990 has been assumed stable at the 1979/80 level. This can be defended on the following grounds:

1. Population growth rates are very small or even negative. Woehlken and Salamon (1982), in a disaggregate study, put the rate for the EEC (9) at 0.09, with the range being from -0.37 for Germany and 0.43 for France. Other studies use higher rates but these are older and on a more aggregate level (e.g., USDA, 1971; 1978). The Woehlken and Salamon estimates are in line with those used by Boddez (1980) and slightly lower than those in Uhlmann (1980).
2. Aggregate EEC wheat requirements have been stable over the past decade (USDA, 1981: 14). The total utilization of soft wheat decreased in the period 1973/74-1978/79 with an annual rate of -0.3 percent (Commission, 1982).
3. Per caput use of cereals for human consumption is decreasing (Uhlmann, 1980, Woehlken and Salamon, 1982).
4. The feed sector is the only dynamic element in wheat utilization, but is unlikely to be a growth component for wheat use:
   -The feed industry is very cost-conscious. The use of non-grain feed ingredients increased 250 percent between 1974 and 1979 (Toepfer (b), USDA, 1981); the production of corn increased 250 percent between 1960/64 and 1980, while the total grain production increased 150 percent.
   - the silo pricing system will leave it to the market to find prices for the different grains, relative to their feed value.
5. The 1979/80 level of wheat utilization is slightly above the average of 1974/75-1980/81; it is the level in the first year of the EMS, which promises less dramatic differences in national price levels and a more

stable demand structure. It also should be remembered that the prices of 1985, 1987 and 1990 were estimated on this basis.

3.2.4 Supply Elasticity

The supply elasticities used are an amalgam of estimates from different sources. The choice of supply elasticity is critical for the size of the production due to subsidization. The literature on this subject yields the supply elasticities for wheat shown in table 3-1.

Supply becomes more and more responsive to price with the inclusion of time. At any given moment the supply is fixed. It is only if one looks at supply over time that there is a possibility of change. Supply can be manipulated via the planting decisions of the individual farmer and via the variable inputs such as fertilizer. Over the longer term all inputs can be seen as variable, even land and technology. thus, over the long term supply will be more and more subject to change: the supply becomes more and more elastic. It is, therefore, to be expected that supply elasticity estimates that are derived from a long time series of production responses to price changes will be higher than those derived from shorter time series or cross-sectional data.

For the U.K., the elasticity estimates that use a base period before the U.K.'s entry into the EEC range from 0.19 to 0.41. One acreage response of 0.17 is reported. The one study that includes the CAP (USDA, 1978) shows an acreage response of 0.65 and a yield response of 0.2, resulting in a supply response of 0.85. Also for Ireland, the estimates go up from 0.45 before to 0.85 after 1973.

Estimates for pre-CAP France range from 0.3 to 1.05. USDA (1971) rejects the high estimate (Oury, 1966) because of the strong yield increases in the base period used. However, yield increases remained high at 3.1 percent annually throughout the seventies (Agricultural Outlook, August 1982). The USDA (1978) quotes an acreage response of 0.7 and a yield response of 0.25 resulting in a supply response of 0.95 for the EEC(9).

Table 3.1: Supply Elasticities.

Author	Country	Elasticity	Base Period
Hill (1965)*	England/Wales	0.23	1925-1931
Oury (1966)*	France	0.9-1.05	1946-1961
Jones (1967)*	U.K.	0.33-0.41	1924-1939
Colman (1970)*	U.K.	0.17***	1955-1966
Ferris (1971)	U.K.	0.19	1969-1973
	Ireland	0.45	1969-1973
USDA (1971)	U.K.	0.4	1964-1966
	EEC(6)	0.3	1964-1966
FAO (1973)	Developed Countries	0.4	n.a.
UNCTAD (1974)**	Developed Countries	0.2-0.4	n.a.
Adams (1976)	Developed Countries	0.57	1947-1973
USDA (1978)	EEC(6)	0.7***	n.a.
	EEC(3)	0.65***	n.a.

*Quoted in Askari and Cummings(1976)
**Quoted in Stern et al. (1976)
***Acreage Response to Price
n.a.: not available
EEC(6): Germany, France, Italy, Holland, Belgium, and Luxembourg
EEC(3): United kingdom, Ireland, and Denmark

The high estimates of the USDA (1978) are direct price elasticities, which are used in combination with high cross-elasticities between grains. The development of seeding patterns under the CAP: the strong decline of oats and rye, the slight decrease in wheat acreage, and the increase in barley and corn acreages, do not falsify these high elasticities.

Several of the estimates are explicitly long run elasticities. Here, all estimates have been treated equally, because the stability in the price development in the EEC blurs the distinction between the long and the short run. The final choice of elasticities is influenced by a preference for recent material and estimates on a disaggregate level. The high level of EEC prices and, for several countries, the substantial increase of prices compared to their pre-CAP levels make the case for literature that includes CAP years. The MCA system, the differences in farm structure between member countries, and the differences between European and North American farm practices weigh in favour of estimates on a country level.

The literature indicates that the supply elasticity at the level of the EEC prices might be higher than at the level of prices outside the EEC. There might be a marked impact of the shift of capital and technology into wheat and of structural improvements in the EC agricultural sector on the production decision of the farmer.

To accomodate this observation, a high and a low elasticity have been used for each country in this study. A low one: 0.35, being the average of all estimates except USDA (1978), Oury (1966), and Colman (1970), and a high one: 0.95 for France, being the average of Oury (1966) and USDA (1978), 0.85 for the U.K. being the estimate of the USDA (1978), and 0.80 for the rest of the member states, being the USDA (1978) estimate minus 0.05 to account for the difference in farm structure between the U.K. and other EEC importers.

The choice of two elasticities for each country and their use throughout the period under observation implies that the supply function that underlies each of the estimates has a constant elasticity. This assumption can be defended on the grounds that the period used in this study is relatively short: 1974/74-1990. It can be argued that the agricultural practices will remain relatively constant over this period.

It can also be argued that the supply response of EEC agriculture will not diminish if the price changes are large. The use of the marginal concept of supply elasticities is not falsified by the size of the difference between local producer prices and the c.i.f. price, and the ensuing volume of the production due to subsidization. Elasticity theory assumes that the farmer responds to a change in prices. The relatively low income position of the European farmer assures that the individual farmer will respond to price increases, even large ones, by production expansion. The high producer prices and the increase in productivity during the CAP years have not benefitted the farmers as much as the suppliers of inputs (I.S.E.I. 1979 a). In income, the farmer has stayed behind comparable workers in non-agricultural sectors. Production expansion remains a necessary way to reach a 'fair standard of living'.

It is probable that the supply response depends on the level of the price, with the lower supply response when the prices are close to the c.i.f. price level and the higher supply response when the prices are close to the EEC level. This concept of a changing elasticity has not been incorporated here, but can be used to interpret the results using the high and the low estimates as a range rather than as separate results.

3.3 Sample Calculation and Presentation of Results

The calculation used is a simple one. The difference between the lowest c.i.f. offer price and the EEC price is the Producer Subsidy Equivalent (PSE) and is expressed as a percentage of the producer price (PSE Percent). The PSE amount represents the part of the producer price due to the CAP. To express the fact that the CAP brings forth extra production, the production at the c.i.f. level is set at 100 percent, equalling the total production to 100 percent plus supply response percent. The supply response percent is the PSE percent times the elasticity. The actual amount produced due to subsidies follows logically as:

[production/(100% + supply response %)] X supply response %

Table 3.2 prsents the PSE percentages for 1974/75-1980/81, for each of the member states. Table 3.3 and 3.4 give the estimated quantities produced due to subsidization for 1974/75-1980/81 and 1985, 1987, and 1990 respectively. The total for the EEC(9) has been graphed in figure 3.1. The complete results on the country level are presented in appendix C and D.

3.4 Interpretation of Results

It must be stressed again that the production due to subsidization is not actual production that would not take place in the absence of the subsidization. It is nonsense to reflect on the EEC grain system without the CAP. The production due to subsidization is an analytical concept designed to measure

Table 3.2: PSE Percentages for EEC Member States 1974/75-1980/81.

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
Germany	0	14.53	50.09	44.75	46.20	35.48	25.84
France	0	0	40.15	40.54	30.79	19.49	7.71
Italy	0	2.71	42.80	25.94	20.38	10.83	5.44
U.K.	0	0	31.62	27.69	27.28	22.37	20.72
BLEU*	0	6.00	45.64	45.82	42.27	29.19	19.84
Holland	0	7.21	46.17	40.76	33.33	20.43	9.04
Denmark	0	0	48.67	40.29	31.36	19.06	7.89
Ireland	0	0	40.95	34.88	36.31	17.36	6.21

* Belgium/Luxembourg Economic Union
Source: Appendix C

Table 3.3: Quantities Produced due to Subsidization, under the assumption of high and low elasticities 1974/75-1980/81 (in 1000 tons).

Low Elasticity

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
Germany	0	340	999	979	1130	891	676
France	0	0	1920	2122	2011	1226	611
Italy	0	57	821	359	385	207	102
U.K.	0	0	459	466	576	521	555
BLEU*	0	15	129	110	132	94	57
Holland	0	13	99	83	83	56	27
Denmark	0	0	86	75	64	37	17
Ireland	0	0	25	27	31	14	5
Total	0	425	4538	4221	4412	3046	2050

High Elasticity

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
Germany	0	730	1917	1907	2190	1782	1675
France	0	0	4302	4703	4676	2999	1585
Italy	0	134	1606	741	811	452	228
U.K.	0	0	979	1005	1245	1146	1228
BLEU*	0	33	251	213	258	192	120
Holland	0	29	192	163	167	117	59
Denmark	0	0	166	148	129	78	38
Ireland	0	0	49	55	61	30	10
Total	0	923	9462	8935	9537	6796	4943

* Belgium/Luxembourg Economic Union
Source: Appendix C

Table 3.4: Quantities Produced due to subsidization, under the assumption of high and low elasticities, and under the assumption of constant and declining world prices 1985-1990.

Low Elasticity	constant world price in real terms			world price declining 2% annually in real terms		
	1985	1987	1990	1985	1987	1990
Germany	1220	1307	1435	1337	1280	1698
France	2519	2629	2759	2860	3114	3512
Italy	503	499	492	580	603	642
U.K.	732	754	780	841	908	1022
BLEU*	131	136	140	147	158	175
Holland	94	97	100	106	113	125
Denmark	74	76	79	83	89	99
Ireland	30	31	32	34	37	41
Total	5303	5529	5817	5988	6302	7314

High Elasticity	constant world price in real terms			world price declining 2% annually in real terms		
	1985	1987	1990	1985	1987	1990
Germany	2380	2549	2801	2570	2820	3228
France	5731	5991	6310	6363	6891	7704
Italy	1012	1005	995	1146	1187	1252
U.K.	1543	1591	1654	1737	1866	1085
BLEU*	260	270	280	288	308	338
Holland	187	193	199	206	220	240
Denmark	147	151	157	163	174	191
Ireland	60	62	64	68	73	80
Total	11320	11812	12460	12541	13539	15118

* Belgium/Luxembourg Economic Union
Source: Appendix D

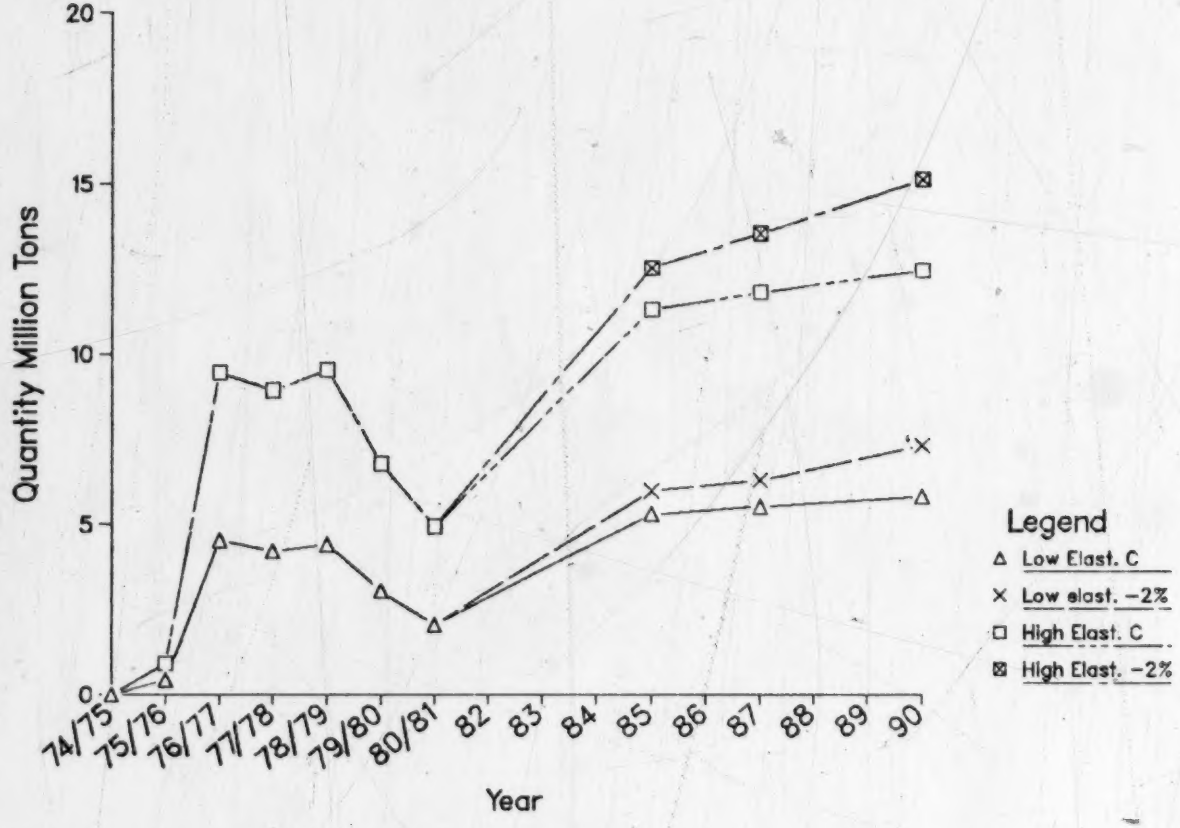

Figure 3.1 Quantities Produced Due to Subsidization 1974/75 - 1990

how much of the actual production can be considered to be related to the existence of the CAP. It should thus be no surprise that it is possible for the amount due to subsidization to go up and the actual production to go down simultaneously, as for example, the case in 1975/76-1976/77. It should also be no surprise that it is possible to have a relatively high total production and no production due to subsidization as in 1974/75. It is simply that no part of the EEC producer price in 1974/75 can be considered subsidized.

The results, as always, reflect the methodology and the assumptions. It is the difference between the producer price on the local level and the lowest c.i.f. offer price in Rotterdam that determines the quantity of total production that can be considered to be due to subsidization. The price difference is illustrated in Figure 3.2. The common intervention price is used before 1980//81, and the projected common target price for 1985, 1987 and 1990, to approximate the producer price. The lowest c.i.f. offer price is used until 1980/81 and the projected 'world price' constant in real terms and declining at 2 percent a year for 1985, 1987 and 1990. The different national price levels due to the MCA system make it impossible to graph the price difference of the EEC(9) accurately, but Figure 3.2 does indicate the price movements in the period under consideration.

The magnitude of the estimates is more likely under-estimated than over-estimated. Over-estimation can occur because of the choice of a too high supply elasticity. This has been countered by the use of two elasticity estimates, the lower of which is defenitely conservative. Under-estimation is the result of the failure to include all national programmes that influence the production of wheat in the EEC. What is calculated here, is the production due to the existence of producer prices in the EEC, which often exceed the prices outside the EEC. Other influences on the production of wheat have been discounted, and this leads to an under-estimation.

The estimated production figures for the years after 1980/81 are trend figures and, thus, show an orderly development. The results for the production due to subsidization in the forecast period are apart from the methodology,

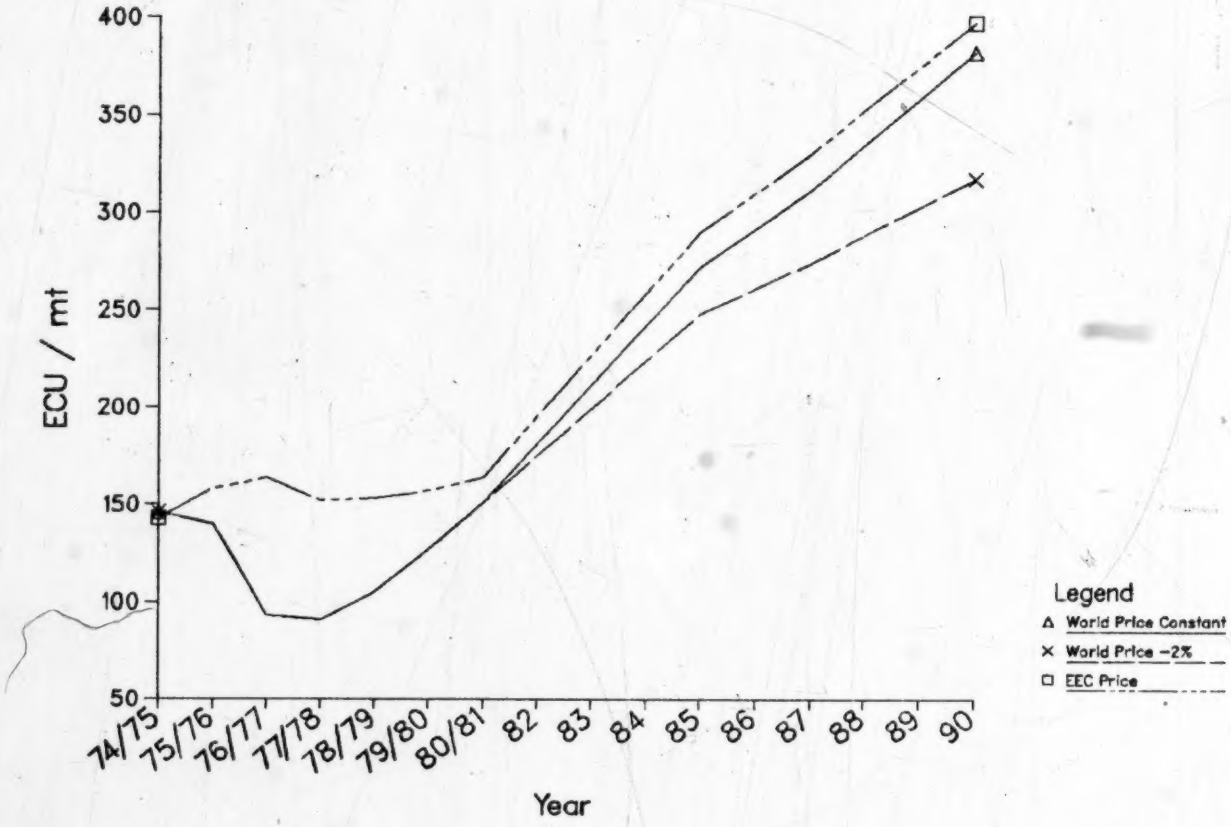

Figure 3.2 Difference Between EEC and World Prices 1974/75 - 1990

also heavily influenced by the assumptions made in the forecasts. Choosing the MinMax pricing strategy means that the common prices are indexed for inflation in the country with the lowest inflation, i.e., Germany. The MCA system, however, makes it possible that real prices actually increase in countries with low inflation and appreciating currencies. The MCA system also retards the speed with which prices in countries with high inflation and depreciating currencies fall in real terms.

The 'world price' is constant or declines 2 percent annually in terms of U.S. dollars. The U.S. inflation rate is assumed to be higher than the German rate, especially in the first years of the eighties. Thus, the gap between EEC and 'world' prices widens. The effect of the inflation assumption is especially dramatic in the first five years of the eighties.

The effect of the assumptions about the 'world price' proper, constant versus 2 percent annual decline, is not very marked. It is to be expected that the difference becomes larger over the years because of the 2 percent compounded annually.

The choice of elasticity is critical. It can be argued, however, that this choice is not necessary. The results can be interpreted as the top and bottom end of a range. National price levels can differ due to the MCA system, and so can the supply elasticities. As mentioned in Chapter 3.2.4, there are indications that the supply elasticities are very high at the level of EEC prices, or, at least, higher than at the pre-CAP level. In the same vein, it can be argued that the supply elasticities in countries with high local prices (positive MCA) are higher than in coutries with lower local prices (negative MCA). The result is a range of relevant elasticities and a range of outcomes of the calculation of the production due to subsidization. In 1977/78, the U.K. had an MCA of -40 percent, while Germany's was +9 percent. In 1985 the forecasted MCA for Italy is -5.6 percent and Germany's is +11.4 percent.

To conclude, a general caveat about the results of the forecasts. Nobody can hope to tell the future and the forecasts should by no means be taken for iron laws. The most that can be hoped for is that the results are not

unreasonable. If the underlying analysis has identified the relevant variables and if the assumptions about the behaviour of this variable do not clash with reality, then the forecasts can give an indication of what might develop in the future. If major changes take place, the forecasts will have to be adjusted. They can serve as a general picture of the future in which the policymaker can intervene and thereby change it.

3.5 Effect on Canada

The wheat produced due to subsidization in the EEC can be viewed as displacing exports from other countries. Less wheat is imported into the EEC countries and EEC wheat takes export opportunities away from the traditional exporters in other markets. Thus, the total amount of wheat produced due to subsidization gives an opportunity to estimate the cost to Canadian farmers.

The loss to Canadian farmers can be approximated by multiplying the total amount of wheat displaced by the CAP by Canada's historical share in the world wheat market. This gives the total amount of Canadian wheat displaced by the CAP. Multiply this amount by the Canadian export price (f.o.b. Thunder Bay) and the cost to Canadian farmers emerges. Table 3.5 gives the results in millions of Canadian dollars for both the high and the low estimates. To put these results in a context, it is useful to approximate the total export earnings for wheat. This can be done by multiplying the total wheat exports by the f.o.b. Thunder Bay price. For 1979/80 the cost to Canadian farmers was in the range of 3.3–7.4 percent of total wheat export earnings, and for 1980/81 between 2.2 and 5.3 percent.

A note of caution is needed. The market share approach to the estimation of the cost to Canada of the EEC subsidization is valid in as far the assumption of homogeneity of all wheat is valid. It is questionable, however, that French soft wheat and Canadian hard wheat are direct competitors in all markets. The differences in types of bread between countries makes the homogeneity assumption restrictive and this will lead to an over-estimation of the price tag calculated in this chapter.

Table 3.5: Estimated Cost to Canada of EEC Subsidization of Wheat 1974/75-1980/81, under the assumption of high and low elasticities (in million Can.$).

	Elasticity	
Year	Low	High
1974/75	0.0	0.0
1975/76	13.5	29.4
1976/77	121.3	252.8
1977/78	126.0	266.8
1978/79	144.4	311.9
1979/80	116.0	259.0
1980/81	88.3	212.8
Total	609.5	1292.7

Sources:
USDA (1982) for Canada's market share
CWB annual report (1982) for f.o.b. prices Thunder Bay 1 CWRS 13.5%
own calculations for production due to subsidy

More important is the price effect of the CAP on the world market. The extra production that comes forth due to the subsidization of wheat in the EEC has a price depressing effect on the world market price of wheat. Each and every ton of wheat sold by Canada fetches a lower price than it would have if the CAP did not exist. This price effect has not been incorporated into this study, but should be kept in mind when interpreting the numbers given in table 3.5.

4. EEC External Trade and Global Demand

4.1 EEC Export Pattern

4.1.1 Historical Overview

The EEC has been an exporter of wheat (including wheat flour) throughout the 1960s and 1970s. Its percentage share of global trade has been considerably above 10 percent since 1978/79. In 1981/82 the EEC accounted for 14.4 percent of the global trade and exported 14.5 million metric tonnes (USDA, 1981). In 1982/83 an estimated 15 million metric tonnes will be available for exports ,including 4.5 mmt wheat flour and 1.3 mmt aid (Toepfer, July 1982). The EEC has established itself as a major factor in the wheat market and in the wheat flour market it is the dominant force with 64 percent of the market share.

The exportable surplus of the EEC(9) can be determined from the figures used in chapter 3.2.2 and 3.2.3. If imports are ignored, then, for the aggregate of the Community, the surplus will be 8.2 million tons in 1985, 10.5 million tons in 1987, and 13.9 million tons in 1990.

Although all EEC member states import and export wheat, it is France which is the only exporter of importance in the EEC. Germany and Denmark are self-sufficient in wheat and the other member states are net importers. France, however, is close to a self-sufficiency rate of 200 percent (Commission, 1982). It is, thus, the export pattern of France that is relevant here.

Table 4.1 shows the export pattern Examination shows the importance of Africa and especially North Africa as a market for French wheat and wheat flour. The export pattern clearly shows the close ties which France has kept with former colonies (including Vietnam) and its geographical position close to North Africa. The centrally planned economies are getting more important. Exports to the USSR are expected to be between 800,000 and 1,000,000 tons for the 1982/83 crop year (Life Stock Feed Board, october 1982), and to China between the 900,000 and 1,400,00 tons (Lifestock Feed Board, January

Table 4-1: Export of France (Extra-EEC): Wheat and Wheat Flour 1974-1980 (in 1000 tons).

	1974	%	1975	%	1976	%	1977	%	1978	%	1979	%	1980	%
Total	3,658	100	4,764	100	3,453	100	1,940	100	2,754	100	4,574	100	7,664	100
Africa	2,194	60	2,807	59	1,571	45	1,162	60	1,874	68	2,741	60	4,186	55
North Africa	1,726	47	2,481	52	1,008	29	445	23	1,025	37	1,891	41	3,174	41
Middle East	345	9	107	2	204	6	n.a.	--	135	5	225	5	512	7
Other Asia	244	7	1,510	32	728	21	396	20	369	13	309	7	304	4
Market Economies														
China	205	6	0	--	0	--	0	--	0	--	79	2	134	2
U.S.S.R.	0	--	0	--	0	--	0	--	0	--	5	1	564	7
Eastern Europe	25	0.5	4	--	54	2	0	--	0	--	560	12	1,589	21
W. Europe	244	7	230	5	218	6	15	1	155	6	294	6	274	4
Non-EEC														
Other	401	10.5	106	2	678	20	367	19	221	8	361	7	101	1

Source: United Nations Commodity Statistics ,series D, various issues

1983) But Africa remains most important and ,more specifically, North Africa.

If we look at wheat flour by itself, it is not only France that needs to be considered. Germany and Holland are and have been major exporters of flour. The destinations of flour are concentrated in North Africa and the Middle East (USDA, 1981). Eastern Europe has been a major market for German flour.

4.1.2 Framework Agreements

More and more grain in international trade moves under framework agreements. These are contracts, mostly between governments, covering more than one year, and stating maximum and minimum quantities, while details such as price and exact amounts are left to yearly negotiations between the partners (Bain, 1981).

The Commission brought the idea of long term agreements forward at the end of 1980 in a strategy paper called *Guidelines for European Agriculture*. There exists a bilateral agreement between France and China, which was signed in 1980, providing for the supply of 500,000 to 700,000 tonnes of wheat over a three year period starting in 1980/81 (IWC, 1982). The French government is also actively pursuing a bilateral agreement with the USSR. High level contacts have taken place (Agra Europe, East Europe Agriculture, October 1982).

French wheat has had difficulty finding buyers in China and the USSR, recently, because the export restitution that is available, does not make the price attractive enough (USDA, 1981; Agra Europe, 1982). This points to the importance of prices in the direction of trade flows. The wheat that does go to China has been subsidized above and beyond the export restitution by a freight subsidy.

The traditional exporters, USA, Canada, Australia and Argentina, depend more heavily on the export markets than the EEC and all, with the exception of the U.S., have government agencies that control the exports. Stability, through framework agreements is therefore more important and more easily executed for these countries than for the EEC.

The EEC has, in its export refunds, a system of great flexibility. The system is capable of clearing the market at all times. Therefore there is no urgent need for framework agreements.

Many national governments have resisted the push of the Commission towards framework agreements. An agreement in which the EEC is a partner brings influence to the Commission. National exports, financed with the help of EEC funds, keeps the locus of power at the national government level. Besides, only France has sizeable exportable surpluses, and the two framework agreements mentioned have France and not the EEC as a contract partner.

What results is that it is unlikely that the EEC will engage in framework agreements. But there are indications that the export subsidies, as determined by the Commission, might not be enough for France, forcing it towards ways to stabilize its exports. It should not be forgotten that the production effect of the CAP not only increases production in France, but also reduces its traditional markets in other EEC countries.

4.1.3 Food Aid

EEC food aid did not exist before 1968. It comes into existence under the Food Aid Convention of 1968. All aid is given free of charge, and freight charges are often paid by the Community as well. Aid is distributed on the basis of need, GNP per caput in the receiving country, and its balance of payments' position (Commission, 1982).

The food aid issue, like the framework agreements, is the locus of tension between the member states, guarding their sovereignty, and the Commission, trying to increase its influence. Food aid was originally under very close scrutiny of the Council, but in 1975 the Commission was given more leeway by setting minimum and maximum bounderies within which the Commission could work. However, Commission proposals to increase the size and scope of the food aid program have found little support in the Council (Talbot, 1979).

Table 4.2: EEC Cereal Aid 1968/69-1979/80 (in 1000 tons).

YEAR	QUANTITY	YEAR	QUANTITY
1968/69	301,000	1974/75	643,500
1969/70	335,500	1975/76	708,000
1970/71	353,140	1976/77	720,500
1971/72	414,000	1977/78	720,500
1972/73	464,400	1978/79	720,500
1973/74	580,000	1979/80	720,500

Source: Commission (1982)

Aid is given in the form of grains, milk products, and butteroil. Table 4-2 gives an overview of the cereal aid (Commission, 1982).

4.2 EEC Imports

The CAP has greatly diminished the importance of the EEC as a market for the traditional exporters. The need for imports is determined by the state of the milling technology. The imports consist mainly of high quality, high protein wheats from the U.S. and Canada to upgrade the quality of flour milled internally. Since bread is not the same all over the EEC, it is to be expected that there are large differences in import levels between the member countries. Indeed, the average protein content of the flour used varies from 9.1 percent in Luxembourg to 12.2 percent in West Germany (I.G.I., 1977). As is shown in Tables 4.3 and 4.4, the U.K. is the only substantial importer, accounting for approximately half of all extra-EEC imports. The Canadian presence in this market is strong.

The future of EEC imports will depend on The average EEC(9) import of Canadian wheat for the period 1974/74-1980/81 was around the 1.6 million tons. The effect of the CAP on the Canadian exports to West Europe can be seen if one considers the numbers from before the institution of the CAP. The average Canadian wheat export to West Europe, which is an area only slightly larger than what is now the EEC(9), in the period 1960/61-1962/63 was 5.3 million tons. developments in the milling and baking technology used. The trend

Table 4.3: Canada's Wheat Exports to EEC Countries (excl. Durum) in 1000 tons

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
Germany	15	11	313	52	0	12	0
France	4	2	3	6	0	4	0
Italy	122	243	333	132	168	95	239
U.K.	1543	1179	1382	1494	1305	1354	1397
BLEU*	44	2	30	71	32	6	0
Holland	148	28	149	124	4	23	9
Denmark	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0
Total	1876	1465	2210	1879	1509	1494	1645

* Belgium Luxembourg Economic Union

Source: Canadian Wheat Board, Annual Report 1980/81

Table 4.4: Canada's Share of Non-EEC Imports of Wheat in EEC Countries (excl. Durum) in percentages

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
Germany	3.5	2.6	91	13.3	0.0	4.6
France	6.3	2.9	2.4	6.5	0.0	2.4
Italy	31.4	16.5	38.7	17.6	27.2	14.5
U.K.	68.4	53.4	100.0	78.9	71.2	68.1
BLEU*	14.8	.4	28.0	42.0	18.3	3.5
Holland	18.2	2.3	26.8	23.9	.6	4.2
Denmark	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.0	0.0	0.0	0.0	0.0	0.0

Source: Derived from Canadian Wheat Board, Annual Report 1980/81
Commission 1982
Note: Both sources do not use the exact same figures. The results should be interpreted with caution.

is towards the use of more European soft wheats in the grist (USDA, 1981: 20).

4.3 Global Demand Projections

4.3.1 Trade model approach

As an example of a full scale trade model, the Grain-Oilseed-Livestock (GOL) model of the USDA will be presented (USDA, 1978). The GOL model is an equilibrium model: it projects a set of equilibrium values for production,

consumption, trade and prices of grains, oilseeds, livestock and livestock products.

Different sets of equilibrium values are generated because different assumptions (alternatives) about the variables determined outside the model are used. These variables, the externally determined part of the model, include demand shifters, such as population and income growth rates, and consumer preference variables. Also included are supply shifters: technology variables, availability and costs of agricultural inputs, national, commerical and agricultural practices, and yield growth rates.

These variables are fed into the formal mathematical model, specified to capture the interaction of production, consumption, trade, and prices for the commodities under consideration. They can be grouped to show the major components: demand and supply for livestock; demand and supply for food and feedgrains; price linkages within regions; regional equilibrium equations; price linkages between regions; and global equilibrium equations.

Out of the model roll the equilibrium values of production, consumption, trade, and prices, the responding variables. These variables are given for fourteen separate commodities in twenty-eight regions of the world. The three year average (1969/70-1971/72) was used as a base for projections to 1985. The model has been used to make projections to 2000, but results are only available in an aggregate form (Rojko and O'Brien, 1976).

Six alternative scenarios are given for the externally determined variables. They range from slowed income growth and low import demand, coupled with the successful implementation of protectionist policies to accelerated production in LDC's in the context of high income growth rates and strong import demand.

The most optimistic scenario from the point of view of exporters assumes high income growth rates, increased imports in centrally planned economies, Japan and rich LDC's, no productivity increases in LDC's and less trade restrictions on the part of the EEC. This yields ,in 1985, a net wheat import of the EEC, up to 9 million tonnes, and a net export of 18.7 million tonnes, or 21 percent of the world market, for Canada.

Only two scenarios yield EEC production figures that are in line with those used in Chapter 3. The first one assumes income growth on the trend, import demand constrained by high national price levels in the EEC and Japan, emergence of USSR as a net exporter of wheat, and a reduction of imports by the USSR and Eastern Europe. The second one uses the same assumptions except that income growth rates are set one-third lower. The first scenario yields an EEC wheat production of 44,742,900 tons and no exportable surplus. Canada exports 14 million tons (24 percent market share) under these assumptions. The second scenario results in an EEC(9) production of 48,627,800 tonnes and an exportable surplus of almost 4 million tons (7 percent market share). Canada exports 13.8 million tons of wheat in 1985. (24 percent of the world market)

4.3.2 Trend Analysis Approach

Womack and Bredahl (1981) examine, via trend analysis, the gaps between consumption and production for major trading regions. The basic aim of this study is to research the fundamental economic forces that underlie the rapid expansion of U.S. grain exports.

For wheat, production and consumption trends are calculated for the USSR, Western Europe, USA, and others. This group includes major exporters, such as Canada and Australia, and importers, such as Japan and China. It is shown that the USSR has been a net importer since the late 1960s and that Western Europe became an exporter in 1973. The essence of trend analysis demands that this will continue to be so in the future. Prices are not taken into account.

For the world less the U.S., it is shown that the production of wheat does not keep up with the consumption. In 1980 the gap is 35 million tonnes and it is growing by 0.94 million tonnes a year. This results in a shortfall of 38.28 million tonnes in 1985 and 42.98 million tonnes in 1990. This shortfall can be filled by the U.S., which has a surplus in 1980 of 35 million tonnes and this will increase by 1.12 million tonnes a year. However, the U.S. will face

acreage constraints by the mid-1980s because not only wheat, but also coarse grains and oilseeds show an upward production trend.

For Western Europe the gap between the production and the consumption trend is calculated at 5 million tonnes and it is growing at 0.62 million tonnes a year. This leads to a surplus of 7.71 million tonnes in 1985 and of 10.81 million tonnes in 1990. If it is noted that non-EEC Western European countries are not importers, then these figures should be increased slightly to arrive at EEC figures. French exports to non-EEC Western European countries were 0.294 and 0.274 million tonnes in 1979 and 1980 respectively.

It is assumed that the Canadian, Argentinian and Australian surpluses will have no problem finding a market. This is implied in the wheat deficit that the group, in which they are lumped together with a wide variety of importers, shows.

4.3.3 Eclectic Approach

A synthesis of reliable information and short run predictions, which are extended over the time period to 1990 is presented by Richter (1982).

The average import demand for the years 1976-80 and Canada's share in the market are the starting point of this analysis, which centers on volumes, not prices. Prices have been discounted due to importance of domestic policy goals of major importers (USSR, China, Japan ,and EEC) in their import decision.

Canada's market share is assessed at 16 percent in 1984/85 and at 18 percent in 1989/90. The 16 percent is a reflection of a trend towards supply diversification by major buyers, notably the USSR in the wake of the 1980 grain embargo by the U.S. The total market growth, the effective import demand for grains, is set at 2.5 to 1.8 percent per year. This growth rate is modified by assumptions about the agricultural sector of the USSR and the EEC. The USSR is expected to need only small quantities of wheat in the second half of the decade due to low population growth rates and gradual improvements in disposable income, which will favor feedgrains over bread grain. Wheat production is also expected to be on the top end of the cycle instead

of at the bottom end, resulting in ample supplies. The EEC is expected to increase its market share due to the CAP.

All this results in a foreign import demand for Canadian wheat of 16.6 million tonnes in 1984/85 and 21.5 million in 1989/90.

4.3.4 Evaluation

Large scale models such as the GOL model have a strong normative element. They are not built to fit the existing situation statistically, but to approach the existing relationships. The GOL model is an equilibrium model and, therefore, has to yield equilibrium results. This is not always true in the real world. Still a large measure of realism can be reached and especially the two scenarios that yield results compatible with the production data used in Chapter 3 sound realistic after the failure of the 1982 GATT ministerial conference in Geneva, and a continued lackluster performance of the world economy. Remarkable is that the results for Canada show a very high market share (24 and 22 percent) while the volumes exported remain fairly low (14 and 13.8 million tons), while for EEC, the market shares are a lot less than they have been in the recent past (0 and 7 percent).

Only the most cautious of conclusions can be drawn. There is no unlimited import demand in 1985 and a vigorous competition for the existing markets has to be expected.

This conclusion is supported by the results of Womack and Bredahl. The U.S. has more wheat to export in 1985 and 1990 than the rest of the world needs. In their analysis, the U.S. is seen as the residual supplier. It is to be expected that the adjustment in a situation of oversupply will be born by other exporters as well. The institutional arrangements make Canada more vulnerable than the EEC. It should be noted, however, that trend analysis has a strong feature of inflexibility. What happened in the past must happen in the future. This is debatable, especially for the USSR.

Richter's analysis takes possible trend reversals into account. It is also the only analysis presented here that takes the aftermath of the U.S. grain embargo

of 1980 into the picture. What this approach loses in mathematical rigour, it makes up for in its approach to common sense. Here also, however, is the picture one of limited foreign demand. Exporters will meet each other in the market place.

5. Conclusion

One major and two minor lines have been spun in this study. The major one is the estimation of the effect of the CAP on the production of wheat in the EEC; this estimation is based on a detailed look at the CAP. The minor ones are an exploration of where this extra production finds its market, and of the general demand situation in the world wheat market.

The development of the CAP requires an analysis on the country level. Price policy has remained the major tool to reach the income goals of the Treaty of Rome, and the MCA system makes the prices in national currencies different from each other. In order to estimate the effect of the CAP on the production of wheat, the local producer price is compared with the price at which wheat is available, on any given day, at the borders of the Community: the lowest c.i.f. offer price in Rotterdam. The difference between these two prices can be seen as a subsidy from the consumers in the EEC countries to the farmers. The quantity of wheat produced due to this subsidization are estimated using supply elasticities. Aggregated for the EEC (9) the results range (in thousand tons) as follows: 0 in 1974/75; 4,221-8,923 in 1977/78; 2,050-4,943 in 1980/81; 5,303-12,541 in 1985; and 5,817-15,118 in 1990.

An examination of the export pattern of France, which is the only major exporter in the EEC, shows strong ties with its ex-colonies in Africa, especially North Africa. The proximity of France to the Middle East, Eastern Europe, and to a lesser extent, the USSR, makes its presence felt there too. Although overtures have been made to China, it does not yet constitute a market of significance.

Supplies are expected to remain relatively abundant throughout the eighties. Adjustments will have to be made by the major exporters. This onus will fall more upon the traditional exporters (U.S.A., Canada and Australia) than on the EEC due to the institutional arrangements of the latter. The CAP is an internal EEC policy and the external effects of it are taken as unavoidable consequences by the EEC member states. There is no EEC export policy but there are external effects of the CAP.

Tying these lines together, the following emerges: The EEC will increase its exports in a market that has definite growth limits. It will, thus, increase its market share. EEC grain will be especially competitive in the North African Middle Eastern, and Eastern European markets. The USSR will be an uncertain importer but if it decides to import, European grain is to be expected to take its share. EEC presence in the Pacific Rim countries, with the exception of the French ex-colony of Vietnam, will not be large, due to the high transportation costs which will put an additional strain on the EEC budget due to the export subsidies. No physical barrier to the exports are to be expected due to the highly developed EEC infrastructure.

For Canada, the CAP has meant a decline in the exports to the EEC member states and increased competition in several other markets, especially Eastern Europe, the USSR, and Northern Africa. European wheat has displaced Canadian wheat and has, thus, constituted a cost to the Canadian farmer. The cost of the CAP to the Canadian farmer has been mitigated by the buoyancy of the world wheat market during most of the historical period under consideration. Abundance of supplies during the forecasted time will make the EEC presence in the world wheat market be felt more acutely.

A note of caution must be sounded. The demand projections used here reflect reality only to a certain degree. Trend analysis presumes no changes in policy; the trade model approach selects alternative policies, but cannot be exhaustive in its selection; and the eclectic approach, although it takes all past policies into account, cannot claim to foresee all possible policy options. Each of the three approaches gives a possible picture of the future. New policy initiatives change the future and call for the adjustment of the forecasts. good examples of the changing enviroment are the the conflict between the US and the EEC over export restitutions and the acreage reduction programme in the US: the payment in kind programme (PIK). Unable to take action against the EEC export subsidies under the GATT, the US is countering the increased presence of the EEC in the grain market by several subsidy programmes of their own. Part of the wheat necessary to produce the one million tons of wheat flour

sold to Egypt in February 1983 is being provided to the millers free of charge, reducing the cost of the flour (export PIK). There is also a blended export credit programme to encourage the export sales. The PIK programme pays the farmers wheat, in quantities up to 95 percent of normal harvest, to abstain from planting wheat. The effect of these programmes is already being felt. A sale of wheat to Iraq using blended credit deminishes the Canadian export possibilities to this traditionally Canadian market On the other hand, however, there is the succes of the PIK programme which will reduce US wheat acreage by some 25 percent, creating the possibility of reduced carry-over. The uncertainty over the developments remains high and this reduces the reliability of the forecasts.

Finally, it is possible to formulate several policy recommendations from a Canadian point of view:

1. Concentrate the selling effort in the EEC countries on the U.K. and Italy. It is shown in Chapter 4.2 that these two are the major importers in the EEC. Also, both are countries with historically weak currencies and subsequently often significant negative MCA's. As was argued in Chapter 2.3.2, negative MCA's keep producer prices at the predepreciation level and thus forestall a production expansion. Negative MCA's also lower the net landed price and, thus, stimulate import demand. It should be noted that the strength of the Pound Sterling in the last years is unlikely to continue if the world oil market remains in a situation of weak demand and abundant supplies.
2. Avert, by all means possible, an open confrontation between the U.S.A. and the EEC on the subsidization issue. Talks between the U.S. and the EEC are ongoing but progress is minimal. The U.S. is exporting one million tonnes of subsidized wheat flour to Egypt in 1983, close to 17 percent of Egypt's total imports in 1980/81, and EEC bureaucrats give no sign of weakness on the point of subsidization. An all-out trade war would seriously affect the wheat prices, especially in view of the substantial stocks in the U.S. The subsidization of wheat in the EEC is a transfer of

money from the consumer and the taxpayer to the producer. In the U.S., the efforts to reduce the carry-over stocks, both in the domestic and in the export market have been financed out off the general revenue. Canada cannot hope to be able to afford similar measures.

3. Study the grade requirements in the major markets for Canadian wheat, especially in the Pacific Rim countries. In a situation of increased competition of EEC wheat, it is necessary to concentrate on those markets where Canada has a locational advantage over the EEC. The Pacific Rim countries fit this bill and, moreover, they have traditionally been a Canadian market. It is likely that the emphasis on high protein bread wheats does not correspond with the requirements in those markets. The decline of the EEC market makes this emphasis questionable.

Bibliography

Adams, F. and Behrman, J. *Econometric Models of World Agricultural Commodity Markets: Cocoa, Coffee, Tea, Wool, Cotton, Sugar, Wheat, Rice.* Cambridge, Mass: Ballinger, 1976.

Agra Europe. London: Agra Europe (London) Ltd. various issues 1974-1981

Agra Europe.*East Europe Agriculture, a Monthly Review.*London:Agra Europe (London) Ltd. various issues 1974-1982

Agricultural Outlook. Washington: Economic Research Service of the U.S.D.A. various issues 1974-1982

Askari, M. and Cummings, J. *Agricultural Supply Response: A Survey of Econometric Evidence.* New York: Praeger, 1976.

Bain, R. *Changes in the International Grain Trade in the 1980s.* Washington: United States Department of Agriculture; ERS FAER #107 (1981).

Blom, K. and Meester, Gerrit. Personal interview at Landbouw-Economisch Institute, The Hague, September 1982.

Boddez, G.; Ernens, M.; Frank, W.; and Lommer, J. "Demand Estimation 1985 of Food and Agricultural Commodities in EC and Member States," in *European Review of Agricultural Economics,* 5-3/4 (1978).

Boddez, G.; Ernens, M.; Frank, W.; and Lommer, J. *Agricultural Forecasts 1985 For EUR-6, EUR-9 and Member States.* 9 Vol. Leuven: Centrum voor Landbouw-Economisch Onderzoek, 1980.

Canadian International Grains Institute. *Grain and Oilseeds: Handling, Marketing, Processing.* 2nd Edition. Winnipeg: Canadian International Grains Institute, 1977.

Canadian Wheat Board. *Annual Report 1980/81.* Winnipeg: Canadian Wheat Board, 1982.

Commission of the European Communities. *La Situation de l'Agriculture dans la Communaute, Rapport 1981.* Brussels: Office des Publications Officielles des Communautes Europeennes, 1982.

Clerc, F. "Attitudes Francaises vis-a-vis de la Politique Agricole Commune," in *Prospects for Agriculture in the European Economic Community.* Edited by M. Tracy and I Hodac. Brugge: de temple, 1979: pp. 353-363.

Commission of European Communities. *Agricultural Markets, Prices, 1973-1981.* Brussels: Commission of European Communities, 1982.

Commission of European Communities. *Yearbook of Agricultural Statistics.* Brussels: Eurostat, various issues.

Doll, H. and Weber, A. "Long Term Projections of Grain and Rice Yields and of the Total Agricultural Production," in *European Review of Agricultural Economics.* Vol. 6-4 (1979).

de Veer, J. "The Objective Method: An Element in the Process of Fixing Guide Prices Within the CAP," in *European Review of Agricultural Economics,* Vol. 6-3 (1979).

Food and Agriculture Organisation *Agricultural Protection: Domestic Policy and International Trade.* Rome: Food and Agriculture Organisation 673/lim/9 (1973).

Fennell, R. *The Common Agricultural Policy of the European Community.* London: Grenada Publishing Ltd., 1979.

Fennell, R. *The CAP: A Snythesis of Opinion.* Ashford: Wye College, 1973.

Ferris, J.; Josling, T.; Davey, B.; Weightman, P.; Lucey, B.; O'Callaghan, L.; and Sorenson, V. *The Impact on U.S. Agricultural Trade of the Accession of the U.K., Ireland, Denmark and Norway to the EC.* Michigan: Institute of International Agriculture, 1971.

Ferro, O.; Lechi, F.; and Ricci, G. "Italian Attitudes to the Common Agricultural Policy," in *Prospects for Agriculture in the European Economic Community.* Edited by M. Tracy and I. Hodac. Brugge: de Temple, 1979: pp. 378-394.

Heidhues, T.; Josling, T.; Ritson, C.; and Tangermann, S. *Common Prices and Europe's Farm Policy.* London: Trade Policy Research Centre, Thames Essay #14, 1978.

International Wheat Council. *Reviewof the World Wheat Situation 1980/81.* London: International Wheat Council, 1982

Irving, R.W. and Fearn, M.A. *Green Money and the CAP.* Ashford: Wye College, Occasional Paper #2, 1975.

I.S.E.I. "Agricultural Integration and Economic and Monetary Divergence." The Hague: Landbouw Economisch Instituut, 1979a (Mimeograph).

I.S.E.I. "Landbouw Integratie en Economisch-Monetaire Divergentie." The Hague: Landbouw Economisch Instituut, 1979b (Mimeograph).

Jabara, C.; and Brigida, A. *Variable Levies: Barriers to Grain Import in France, the Netherlands, the Federal Republic of Germany and the United Kingdom.* Washington: United States Department of Agriculture, FAS Report #156 (1980).

Jabara, C. *Trade Restrictions in International Grain and Oilseed Markets: A Comparative Country Analysis.* Washington: United States Department of Agriculture, FAS Report #162 (1981).

Jabara, C. "Effects of MCA's in Determining Rates of Protection from EC Grain Import Levies," in *Canadian Journal of Agricultural Economics,* Vol. 29-1 (1981).

Josling, T. *Developed Country Agricultural Policies and Developing Country Supplies: The Case of Wheat.* IFPRI Research Report #14 (1980).

Josling, T.; Langworthy, M.; and Pearson, S. *Options for the Farm Policy in the European Community.* London: Trade Policy Research Centre, Thames Essay #27 (1981).

Josling, T.; and Pearson, S. *Developments in the Common Agricultural Policy of the European Community.* Washington: USDA-ERS FAER #172 (1982).

Koester, U. "Requisites and Possibilities of a Controlled Nationalization of Agricultural Policy," in *Inter Economics,* March 1981.

Langworthy, M.; Pearson, S.; and Josling, T. "Macro Economic Influences on Future Agricultural Prices in the European Community," in *European Review of Agricultural Economics, Vol. 8-1 (1982).*

L'Europe Verte. "Le Probleme des Montans Compensatiores Monetaires," L'Europe Verte. (March 1978).

Lifestock Feed Board. *Grain Facts* Montreal: Lifestock Feed Board, various issues 1974-1983

Loseby, M. and Venzi, L. "The Effects of MCA's on E.C. Trade in Agricultural Commodities," in *The European Review of Agricultural Economics,* Vol. 5-3/4 (1978).

Marsh, J. "U.K. Attitudes to the CAP," in *Prospects for Agriculture in the European Economic Community.* Edited by M. Tracy and I. Hodac. Brugge: de Temple, 1979: pp. 364-377.

Meester, Gerrit. *Doeleinden, Instrumenten en Effecten van het Landbouwbeleid in de E.G.* The Hague: Landbouw-Economisch Instituut, 1980.

Morris, C. "The Common Agricultural Policy," in *Journal of Fiscal Studies,* March 1980.

Peters, G. "The Green Pound - A Symplified Expository Analysis," in *Journal of Agricultural Economics*, Vol. 31-1 (1980).

Richter, J. "Review of Demand Projections for Agricultural Export Commodities." Edmonton: 1982 (Mimeograph).

Ritson, C.; and Tangermann, S. "The Economics and Politics of Monetary Compensatory Amounts," in *European Review of Agricultural Economics*, Vol 6-2 (1979).

Rodemer, H. *Die EG-Agrarpolitik, Ziele, Wirkungen, Alternativen*. Tuebingen: J.C.B. Mohr, Kieler Studien # 164 (1980).

Rojko, A.; and O'Brien, B. "Organizing Agriculture in the Year 2000," *Food Policy*, Vol. 1-2 (May 1976).

Sampson, G.; and Snape, R. "Effects of the EEC Variable Import Levies," in *Journal of Political Economy*, Vol. 38-5 (1980).

Simpson, G.; and Yeats, A. "An Evaluation of the Common Agricultural Policy as a Barrier Facing Agricultural Exports to the European Economic Community," *American Journal of Agricultural Economics*, Vol. 59-1 (1977).

Stern, R; Francis, J.; and Schumacher, B. *Price Elasticities in International Trade*. Toronto: Macmillan, 1976.

Swinbank, A. "The 'Objective' Method: A Critique," in *European Review of Agricultural Economics*, Vol. 6-3 (1979).

Swinbank, A. "European Community Agriculture and the World Market," in *American Journal of Agricultural Economics*, Vol. 62-3 (1980).

Talbot, R. "The European Community's Food Aid Program: An Integration of Ideology, Strategy, Technology and Surpluses," in *Food Policy*, Vol. 4-4 (November 1979).

Tangermann, S. "Germany's Role Within the C.A.P.: Domestic Problems in International Perspective," in *Journal of Agricultural Economics*, Vol. 30-3 (1979).

Tangermann, S. "Germany's Position on the CAP - Is It all the Germans' Fault?" in *Prospects for Agriculture in the European Economic Community*. Edited by M. Tracy and T. Hodac. Bugge: De Temple, 1979.

Tangermann, S. "Agricultural Trade Relations Between the E.C. and Temperate Food Exporting Countries," in *European Review of Agricultural Economics*, Vol. 5-3/4 (1978).

Taplin, J. "Demand in the World Wheat Market and Export Policies of the U.S., Canada and Australia." Cornell: Cornell University, Unpublished Ph.D. Thesis, 1969.

Toepfer,(a) *The E.E.C. Grain Market Regulation 1981/82.* Hamburg: Toepfer International, 1981.

Toepfer,(b) *Market Review.* Hamburg: Toepfer International, various issues, 1980-1983.

Uhlmann, S. "Langfristige Vorschatzung der EG - Getreideversorgung," *Agrarwirtschaft,* Vol. 29-8 (1980).

United Nations. *Commodity Trade Statistics.* New York: United Nations, Statistical Papers Series D, various issues.

United States Department of Agriculture. *European Community Grain Policies and Developments.* Washington: USDA FAS, FG-42-81 (1981).

United States Department of Agriculture. *Alternative Futures for World Food in 1985.* Washington: USDA-ESCS-FAER #146, (1978).

United States Department of Agriculture. *World Demand Prospects for Grain in 1980, with Emphasis on Trade by the Less Developed Countries.* Washington: USDA-ERS-FAER #75 (1971).

Woehlken, E.; and Salamon, G. "Bevolkerungsentwickelung und Nachfrage nach Nahrungsmitteln in Westeuropa," in *Landwirtschaft unter veraenderten Rahmenbedingungen.* Edited by Bockenhoff, E.; Steinhauser, M.; and von Urff, W. Munster: Landwirtschaftverlag GmbM, 1982.

Womack, A. and Bredahl, M. "The World Dimensions to U.S. Agricultural Trade," in *International Affairs and U.S. Agriculture,* by J.D. Perry Foundation. Columbia: University of Missouri, Agricultural Experiment Station; Special Report #259 (1980).

Appendix A

Minimum Intervention Qualities 1981-1982

	Soft Wheat	Bread Wheat
sound basic grain in %	88	90
grain other than sound basic grain in %	12	10
1. broken grains	5	5
2. grain impurities	12	5
including:		
shriveled grains	12	
weevil damaged grain	5	
grain with discoloured germs	5	
grains damaged during drying	3	.5
discounts for		
broken grains from:	3	4
grain impurities from:	5	4
3. sprouted grains max.	6-8	6
discounts from:	2.5	2.5
4. miscellaneous impurities	3	3
including		
harmfull weeds	.1	.1
heat damage	–	.05
ergot	.05	.05
discounts for		
impurities from:	1	.5
Minimum weight in kg/hl	68-72	72-75
Maximum moisture	14-16	14-16

Source: Toepfer 1981

Appendix B

1981/82 Coefficients of Equivalence for wheat
in ECU per ton

Origin	Quality	Coefficient to be deducted
USA	Soft Red Winter Garlicky II+III	3.02
	Soft RedWinter I+II	4.53
	Western White II	4.53
	Soft White II	4.53
	Hard Winter/Dark Winter I+II	
	guaranteed protein content 12.4% or less	10.88
	guaranteed protein content 12.5-12.9%	11.79
	guaranteed protein content 13-13.4%	12.69
	guaranteed protein content 13.5-13.9%	13.60
	guaranteed protein content 14% and up	14.51
	Red Spring/Northern Spring/ Dark Northern Spring I+II	
	guaranteed protein content 12.4% and less	11.49
	guaranteed protein content 12.5-12.9%	12.39
	guaranteed protein content 13-13.4%	13.30
	guaranteed protein content 13.5-13.9%	14.21
	guaranteed protein content 14-14.4%	15.11
	guaranteed protein content 14.5% and up	16.02
Canada	No 1 Canada Western Red Spring	
	guaranteed protein content 12.4% and less	12.09
	guaranteed protein content 12.5-12.9%	13.00
	guaranteed protein content 13-13.4%	13.90
	guaranteed protein content 13.5-13.9%	14.81
	guaranteed protein content 14-14.4%	15.72
	guaranteed protein content 14.5% and up	16.62
Argentina	Bahia Blanca/Necochea	10.88
	Up River (Rosa Fee)	10.88
	Down River (Buenos Aires)	10.88
Australia	Faq	8.16
	Hard	10.88
	Prime Hard	
	guaranteed protein content 14% and up	14.51
Sweden	-	0.00
Bulgaria	-	2.72
Romania	-	4.53
Soviet Union	type 441	10.88
	type 431	12.69
	type 121 (SKS 14)	
	guaranteed protein content 14% and up	15.11

Source: Toepfer 1981

Appendix C

Production, Consumption, and Price Data, plus Estimated Quantities Produced due to Subsidization, Under the Assumption of High and Low Elasticities, for the EEC Member Countries 1974/75-1980/81.

for notes see the end of the appendix

Germany: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	7761		7014		6702		7235		8118		8061		8156	
Producer price (DM/ton)	441.3		478.3		505.7		429.3		493.8		495.4		512.2	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	3.064		2.913		2.718		2.595		2.529		2.519		2.521	
c.i.f. price (DM/ton)	448.48		408.78		252.39		237.19		265.67		319.64		379.86	
PSE/ton	0		69.5		253.31		192.11		228.13		175.76		132.34	
PSE %	0		14.53		50.09		44.75		46.20		35.48		25.84	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	5.09	11.62	17.53	40.07	15.66	35.80	16.17	36.96	12.42	28.38	9.04	25.84
Production due to subsidy ('000 tons)	0	0	340	730	999	1917	979	1907	1130	2190	891	1782	676	1675

France: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	18553		14199		15583		17086		20663		192021		23241	
Producer price in FF/ton	654.4		742.6		852.9		874.0		878.9		922.5		969.5	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	5.478		5.338		5.497		5.684		5.792		5.852		5.938	
c.i.f. price in FF/ton	804.72		749.18		510.47		519.64		608.29		742.74		894.75	
PSE/ton	0		0		342.43		354.36		270.61		179.76		74.75	
PSE %	0		0		40.15		40.54		30.79		19.49		7.71	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	0	0	14.05	38.14	14.18	38.13	10.78	29.25	6.82	18.51	2.70	7.32
Production due to subsidy ('000 tons)	0	0	0	0	1920	4302	2122	4703	2011	4676	1226	2999	611	1585

Italy: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	6812		6150		6298		4313		5785		5675		5479	
Producer price in Li/kg.	100.6		126.92		158.26		129.56		146.96		166.24		194.12	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	795.46		879.90		974.85		1049.62		1114.21		1168.08		1218.15	
c.i.f. price in Li/kg.	116.43		123.48		90.53		95.96		117.02		148.24		183.55	
PSE/kg.	0		3.44		67.74		33.60		29.95		17.99		10.57	
PSE %	0		2.71		42.80		25.94		20.38		10.83		5.44	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	.95	2.17	14.98	34.24	9.08	20.75	7.13	16.30	3.79	8.66	1.90	4.53
Production due to subsidy ('000 tons)	0	0	57	134	821	1606	359	741	385	811	207	452	102	228

U.K.: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	6130		4488		4740		5274		6613		7175		8204	
Producer price in Pounds/ton	56.7		67.7		85.7		83.4		94.4		101.1		109.7	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	.5390		.5959		.6403		.6596		.6534		.6184		.5772	
c.i.f. price in Pounds/ton	78.91		83.63		59.46		60.31		68.65		78.49		86.97	
PSE/ton	0		0		26.24		23.09		25.75		22.61		22.73	
PSE %	0		0		31.62		27.69		27.28		22.37		20.72	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	0	0	10.72	26.02	9.69	23.54	9.55	23.19	7.83	19.01	7.25	17.61
Production due to subsidy ('000 tons)	0	0	0	0	459	979	466	1005	576	1245	521	1146	555	1228

Belgium/Luxembourg: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	1078		724		939		795		1022		1014		879	
Producer price in BF/ton	5904		6594		7146		6818		7299		7242		7690	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	45.915		44.167		41.834		40.403		40.122		40.418		40.91	
c.i.f. price in BF/ton	6720		6198		3385		3694		4214		5129		6164	
PSE/ton	0		396		3261		3124		3085		2113		1526	
PSE %	0		6		45.64		45.82		42.27		29.17		19.84	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	2.1	4.8	15.97	36.51	16.04	36.66	14.79	33.82	10.21	23.34	6.94	15.87
Production due to subsidy ('000 tons)	0	0	15	33	129	251	110	213	132	258	94	192	57	120

The Netherlands: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	746		528		710		661		792		836		882	
Producer price in Fl/ton	411.1		458.3		494.2		428		433.3		439.5		460.5	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	3.163		3.03		2.865		2.773		2.751		2.755		2.780	
c.i.f. price in Fl./ton	426.96		425.24		266.02		253.53		288.90		349.69		418.86	
PSE/ton	0		33.06		228.18		174.47		144.40		89.64		41.64	
PSE %	0		7.21		46.17		40.76		33.33		20.43		9.04	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	2.52	5.77	16.16	36.94	14.27	32.61	11.67	26.66	7.15	16.34	3.20	7.23
Production due to subsidy ('000 tons)	0	0	13	29	99	192	83	163	83	167	56	117	27	598

Denmark: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	592		520		192		606		642		589		652	
Producer price in DK./ton	830.1		966.1		1109.8		1064.4		1090.9		1186.9		1280.4	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	7.179		6.912		6.817		6.951		7.130		7.570		7.845	
c.i.f. price in DK./ton	1050.9		970.1		632.9		635.5		748.8		960.7		1182.1	
PSE/ton	0		0		540.12		428.72		342.10		226.22		98.33	
PSE %	0		0		48.67		40.29		31.36		19.06		7.86	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	0	0	17.03	38.94	14.10	32.23	10.98	25.09	6.67	15.25	2.69	6.14
Production due to subsidy ('000 tons)	0	0	0	0	86	166	75	148	64	129	37	78	17	38

Ireland: Soft Wheat

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80		1980/81	
Production ('000 tons)	254		195		200		250		273		245		214	
Producer price Ir. Pounds/ton	69.5		72.2		100.7		92.6		110		103.4		109.8	
c.i.f. price (ECU/ton)	146.37		140.34		92.86		91.41		105.02		126.91		150.86	
Market Exchange rate	.5390		.5959		.6403		.6596		.6672		.6732		.6835	
c.i.f. price Ir. Pounds/ton	78.91		83.63		59.46		60.30		70.06		85.45		102.99	
PSE/ton	0		0		41.24		32.30		39.94		17.95		6.81	
PSE %	0		0		40.95		34.88		36.31		17.36		6.21	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply Response in %	0	0	0	0	14.33	32.76	12.21	27.90	12.71	29.05	6.08	13.89	2.17	4.97
Production due to subsidy ('000 tons)	0	0	0	0	25	49	27	55	31	61	14	30	5	10

Notes

Sources:

Commission (1982)

FEOGA year-end statement various issues

Market rates of exchange per calendar year have been converted to rates per crop year

U.A. converted to ECU via: 1 U.A.= 1.208953 ECU

Belgium and Luxembourg have been taken together to reflect common Eurostat practice. The market exchange rates were given seperately, but the Belgian rates have been used.

Appendix D

Production, Consumption, and Price Data, plus Estimated Quantities Produced due to Subsidization, Under the Assumption of High and Low Elasticities, and Under the Assumption of Constant and Declining World Prices for EEC Member Countries, 1985, 1987, and 1990.

for notes, see the end of the appendix.

Germany: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	9110		9753		10786							
Consumption ('000 tons)	7533		7533		7533							
Surplus ('000 tons)	1577		2220		3253							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	2.389		2.247		2.082							
Producer price (DM/ton)	692.81		741.51		826.55		692.81		741.51		826.55	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	1.421		1.330		1.215		1.421		1.330		1.215	
World price (DM/ton)	386.51		413.63		464.13		352.41		364.42		385.16	
PSE/ton	306.30		327.88		362.42		340.40		377.09		441.40	
PSE %/ton	44.21		44.22		43.85		49.13		50.85		53.40	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	15.47	35.37	15.48	35.38	15.35	35.08	17.20	39.30	17.80	40.68	18.69	42.72
Production due to subsidy ('000 tons)	1220	2380	1307	2549	1435	2801	1337	2570	1280	2820	1698	3228

France: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	22327		23560		25340							
Consumption ('000 tons)	9477		9477		9477							
Surplus ('000 tons)	12850		14083		15836							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	6.607		6.902		7.391							
Producer price in FF/ton	1916.03		2277.66		2934.23		1916.03		2277.66		2943.23	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	4.484		4.695		5.0		4.484		4.695		5.210	
World price in FF/ton	1219.55		1416.15		1910		1112.03		1286.43		1585.0	
PSE/ton	696.38		817.52		1024.23		804.00		991.23		1349.23	
PSE %/ton	36.35		35.89		34.91		41.96		43.52		45.98	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	12.72	34.53	12.56	34.10	12.22	33.16	14.69	39.89	15.23	41.34	16.09	43.68
Production due to subsidy ('000 tons)	2519	5731	2629	5991	2759	6310	2860	6363	3114	6891	3512	7704

Italy: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	4781		4802		4799							
Consumption ('000 tons)	7878		7878		7878							
Surplus ('000 tons)	-3097		-3076		-3079							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	1563		1765		2086							
Producer price in Li/kg	453.37		582.56		828.28		453.37		582.56		828.28	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	1107		1253		1460		1107		1253		1460	
World price in Li/kg	301.22		389.72		557.66		274.64		343.36		462.77	
PSE/kg	152.15		192.84		270.62		178.73		239.20		365.51	
PSE %/ton	33.56		33.10		32.67		39.42		41.06		44.13	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	11.75	26.85	11.59	26.48	11.43	26.14	13.80	31.54	14.37	32.85	15.45	35.30
Production due to subsidy ('000 tons)	503	1012	499	1005	492	995	580	1146	603	1187	642	1252

U.K.: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	6827		7146		7691							
Consumption ('000 tons)	9157		9157		9157							
Surplus ('000 tons)	-2327		-2008		-1463							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	.660		.685		.727							
Producer price in Pounds/ton	191.40		226.05		288.62		191.40		226.05		288.62	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	.462		.482		.512		.462		.482		.512	
World price in Pounds/ton	125.66		149.90		195.58		114.58		132.07		162.30	
PSE/ton	65.74		76.15		93.04		76.82		93.98		126.32	
PSE %/ton	34.34		33.69		32.23		40.14		41.58		43.77	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	12.02	29.19	11.79	28.64	11.28	27.40	14.05	34.12	14.55	35.34	15.32	37.20
Production due to subsidy ('000 tons)	732	1543	754	1591	780	1654	841	1737	908	1866	1022	2085

France: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	22327		23560		25340							
Consumption ('000 tons)	9477		9477		9477							
Surplus ('000 tons)	12850		14083		15836							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	6.607		6.902		7.391							
Producer price in FF/ton	1916.03		2277.66		2934.23		1916.03		2277.66		2943.23	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	4.484		4.695		5.0		4.484		4.695		5.210	
World price in FF/ton	1219.55		1416.15		1910		1112.03		1286.43		1585.0	
PSE/ton	696.38		817.52		1024.23		804.00		991.23		1349.23	
PSE %/ton	36.35		35.89		34.91		41.96		43.52		45.98	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	12.72	34.53	12.56	34.10	12.22	33.16	14.69	39.89	15.23	41.34	16.09	43.68
Production due to subsidy ('000 tons)	2519	5731	2629	5991	2759	6310	2860	6363	3114	6891	3512	7704

Belgium/Luxembourg: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	1111		1153		1221							
Consumption ('000 tons)	1137		1137		1137							
Surplus ('000 tons)	-26		16		84							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	28.11		36.22		33.78							
Producer price in BF/ton	11052		11953		13413		11052		11953		13413	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	25.08		23.77		22.08		25.08		23.77		22.08	
World price in BF/ton	6822		7392		8435		6220		6513		6999	
PSE/ton	4230		4561		4978		4832		5441		6413	
PSE %/ton	38.28		38.16		37.11		43.72		45.52		47.82	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	13.40	30.62	13.36	30.53	12.99	29.69	15.30	34.98	15.93	36.42	16.74	38.26
Production due to subsidy ('000 tons)	131	260	136	270	140	280	147	288	158	308	175	338

Holland: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	788		819		866							
Consumption ('000 tons)	1427		1427		1427							
Surplus ('000 tons)	-639		-608		-561							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	2.643		2.514		2.387							
Producer price in Fl/ton	766.47		829.62		947.64		766.47		829.62		947.64	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	1.742		1.642		1.553		1.742		1.642		1.553	
World price in Fl/ton	468.93		510.66		593.25		427.55		449.91		492.30	
PSE/ton	297.54		318.96		354.39		348.92		379.71		455.34	
PSE %/ton	38.82		38.45		37.40		44.22		45.77		48.05	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	13.59	31.06	13.46	30.76	13.09	29.92	15.48	35.38	16.02	36.62	16.82	38.44
Production due to subsidy ('000 tons)	94	187	97	193	100	199	106	206	113	220	125	240

Denmark: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)		635		660		699						
Consumption ('000 tons)		491		491		491						
Surplus ('000 tons)		144		169		422						
Producer price (ECU/ton)		290		330		397						
Green rate of exchange		7.747		7.505		7.215						
Producer price in DK/ton		2247		2477		2864		2247		2477		2864
World price in $/ton		272		311		382		248		274		317
Market rate of exchange		5.154		5.003		4.784		5.154		5.003		4.784
World price in DK/ton		1402		1556		1827		1278		1371		1517
PSE/ton		845		921		1037		968		1106		1348
PSE %/ton		37.60		37.18		36.20		43.11		44.65		47.06
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	13.16	30.08	13.01	29.74	12.67	28.96	15.09	34.49	15.63	35.72	16.47	37.65
Production due to subsidy ('000 tons)	74	147	76	151	79	157	83	163	89	174	99	191

Ireland: Soft Wheat

	constant world price in real terms						world price declining 2% annually in real terms					
	1985		1987		1990		1985		1987		1990	
Production ('000 tons)	274		285		302							
Consumption ('000 tons)	520		520		520							
Surplus ('000 tons)	-246		-235		-218							
Producer price (ECU/ton)	290		330		397							
Green rate of exchange	.730		.761		.812							
Producer price in Pounds/ton	211.70		251.13		322.36		211.70		251.13		322.36	
World price in $/ton	272		311		382		248		274		317	
Market rate of exchange	.504		.525		.558		.504		.525		.558	
World price in Pounds/ton	137.09		163.28		213.16		124.99		143.85		176.89	
PSE/ton	74.61		87.86		109.20		86.70		107.28		145.47	
PSE %/ton	35.24		34.98		33.88		40.96		42.72		45.13	
Elasticity	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8	.35	.8
Supply response (%)	12.33	28.19	12.24	27.98	11.86	27.10	14.34	32.77	14.95	34.18	15.80	36.10
Production due to subsidy ('000 tons)	30	60	31	62	32	64	34	68	37	73	41	80

Notes

Sources: Josling and Pearson 1982 Uhlmann 1980 Calender year figures have not been converted into crop year figures. If acreage and yield estimates were not available, then the average estimates for the EEC(9) have been used.